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ABSTRACT

This guide is intended for use in providing in-depth formal classroom and on-site instruction in the principles of business and financial management as they apply to operating and managing orchards. Designed to be used with an accompanying Orchard Business Management Record Book, this unit is devoted to management and analysis of an orchard operation. The unit contains 13 lessons that are designed to be taught over 19 meetings. The design of all of the lessons is based on a problem-solving approach, with each lesson including a review, objective, motivation techniques, key questions, instructional text, group discussion questions, a review of major conclusions, and an orchard site visit. Handouts and transparency masters are provided at the end of each lesson section. Economic principles important to orchard management, analyzing returns to costs, tax management, farm credit, marketing, labor management, estate planning, and computerized recordkeeping are covered in unit 2. (MN)

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ORCHARD BUSINESS MANAGEMENT

UNIT II

Management and Analysis of the Orchard Operation

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Wenatchee Valley College
Wenatchee, Washington
July 1, 1988

CE 050447

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FORWARD

The Orchard Business Management curriculum materials and accompanying Orchard Business Management Record Book were developed pursuant of federal grants awarded through the Washington State Board for Vocational Education and the Washington State Board for Community College Education respectively.

The Tree Fruit Production Program at Wenatchee Valley College continually strives to assess the educational needs of the tree fruit industry in North Central Washington and to adjust or develop program components consistent with those needs. The Orchard Business Management course of study is a manifestation of that commitment. The course was designed to provide extensive instruction in financial management of the orchard operation. The concepts and procedures presented in these curriculum materials will assist orchardists in making sound financial management decisions to maximize orchard profitability and to achieve orchard business and family goals.

The Orchard Business Management course consists of two years of formal classroom and individualized, on site instruction. Unit I, Establishing an Orchard Record Keeping System, is to be taught the first year and Unit II, Management and Analysis of the Orchard Operation, is taught the second year, to enrollees who have completed the first year of instruction. There are 14 separate lessons taught over 19, 2.5 hour meetings in Unit I, and 13 lessons taught over 19, 2.5 hour meetings in Unit II.

The lessons presented in the Orchard Business Management curriculum should serve as a guide only. Orchard Business Management instructors should modify, add or delete lesson as per their local industry and to meet their particular instructional objectives.

Class meetings are intended to be held twice monthly during the instructional year. Likewise, twice monthly, 1.5 - 2.0 hour, individualized, on-site instruction sessions should be scheduled for each enrollee. These on-site instruction sessions are to follow-up and support the classroom lessons. The instructional year should be configured to avoid the orchardists' busiest time of the cropping season. Class should start after harvest, run through the winter and spring, and end sometime in June.

These curriculum materials and the Orchard Business Management Record Book will be made available to anyone, at cost, upon request. Components of the record book and the curriculum materials will be updated and revised as necessary to reflect changes in law, regulations, and the tree fruit industry. Purchasers of the curriculum materials will be advised as to the availability of these revisions.

Kent Mullinix, Director
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Wenatchee Valley College
Wenatchee, Washington
July 1, 1988

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TO THE INSTRUCTOR - SUGGESTIONS FOR USE

Unit I of the Orchard Business Management Curriculum, Establishing and Orchard Accounting System is designed to help orchardist establish and learn to maintain a complete orchard record keeping system. The 14 lessons correspond to the various forms within the Orchard Business Managemnet Record Book.

Unit II of the Orchard Business Management Curriculum is Management and Analysis of the Orchard Operation. This unit is composed of 13 lessons designed to help orchardists develop skills to better analyze their business and improve their managerial skills used in their operation.

Lesson components and organization is based on the University of Missouri Format for Adult Instructionial Material. That format reflects a problem solving approach. The major components of each lesson include the review, objective, motivation, key questions, introduction of information, group discussion, conclusions, orchard visit, and materials needed.

Transparency and handout masters needed for the lesson are located at the end of each lesson. Transparency and handout masters are designated sequencially in the following manner TM and/or HO to signify the use as a transparency or handout master respectively, I or II signifying the unit number, /n indicating the lesson number, and /n indicating the number of the master within the lesson. In a few instances, masters are designated from the previous lessons. Transparency and handout masters of the forms from the record book are designated by their form number.

Since a curriculum cannot be "all things to all people" instructors are encouraged to use these units as a guide to teaching an Orchard Business Management course of study. For example transparency and handout nasters are suggested for use, but could be replaced with self designed materials which the instructor feels more appropriate in a specific community. Furthurmore, while one instructor uses all masters within lessons another may only use a select few because the information could be presented in a more appropriate manner for a particular setting.

Each enrollee needs a copy of the Orchard Business Management Record Book In addition the instructor may wish to suggest enrollees maintain a notebook in which, notes, handouts, and examples can be kept. This notebook can become a quick and easy reference for enrollees.

Though not mandatory it is recommended that computer facilities be available with enough stations for all enrollees for instruction of several lessons which involve the use of computer programs. Instructors may wish to obtain an IBM compatible portable computer with a minimum of 640K RAM and 20 megabyte harddisk for use on orchard visits.

Before teaching a lesson, the instructor should thoroughly review the lesson and accompanying materials. Reading the lesson several times and highlighting, circling or color coding specific parts may help facilitate instruction.

The recommended number of teaching days for each lesson are as follows:

LESSON	RECOMMENDED DAYS
The Importance of Record Keeping in Meeting Business and Family Goals	1
Recording Receipts and Expenditures	2
Maintaining Payroll Records	2
Developing an Orchard Map and Land Inventory	2
Developing and Maintaining Enterprise Records	1
Developing a Tree Capitalization and Depreciation Schedule for Orchard Trees	1
Developing and Maintaining a Depreciation Schedule/Inventory for Machinery, Equipment, and Buildings	2
Maintaining a Record of Stored Crops	1
Recording Credit Sources	1
Establishing and Maintaining Family Living Records	1
Planning the Years Cash Flow	2
Preparing the Years Financial Statement	1
Preparing the Years Profit and Loss Statement	1
Maintaining Cultural Records	1
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UNIT II

LESSONS	RECOMMENDED DAYS
Economic Principles Improtant to Orchard Business Management	1
Analyzing Enterprise Returns To Costs	1
Income Tax Management Techniques	2
Closing the Record Book for Analysis	2
Using the Concepts of Time Value of Money	1
Utilizing Farm Credit	1
Planning Partial Budgets Using Packout Records	2
Determining the Economic Feasibility of Replanting Orchards	1
Marketing Washington Fruit	2
Labor Management Techniques	2
Organizing the Orchard Business	1
Estate Planning	1
Options for Computerized Record Keeping	2
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Additionally course/instructor evaluations are included at the end of each Unit. The prepareres of this curriculum would appreciate any information from those evaluations, about course content, that might serve to add to or improve this curriculum materials.

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

I. Lesson 1: Economic Principles Important to Orchard Business Management..1

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ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

I. Lesson 1: Economic Principles Important to Orchard Business Management

A. Review

The review time for this first lesson of Unit II should be used to explain the purpose and content of the materials contained in Unit II.

1. Explain Unit II is designed to help enrollees use their record keeping skills developed in Unit I to becoming better Orchard Business Managers.
2. Explain the contents of lessons in Unit II using HO-II/1/1.
3. Allow time to address any particular problems enrollees have had using the forms of the record book.

B. Objective

Apply basic economic principles to improve management decisions in operating the orchard business.

C. Motivation

1. Ask enrollees if they have ever used any economic principles to improve their management decisions.
2. Explain that you are sure each one of them has applied one or more of the economic principles which will be discussed in lesson 1 in their business or personal money management.
3. All enrollees need is to put the name to that economic principle and understand how it may be applied in various management decisions.

D. Key Points

1. How does the principle of diminished physical returns relate to the orchard operation?

2. How can the principle of diminished returns be used to determine the maximum profit point?

3. How can the equi-marginal principle be used to help improve management decisions in the orchard operation?

4. How can the principle of substitution be used to improve management decisions in the orchard operation?

E. Introduction of Information

The inductive method is used in presenting this information. By starting with simple everyday examples of each principle a vivid yet understandable picture is created in students' minds to relate back to for future reference. Some suggested simple examples are included. Additional examples are given which are more complex and relate to situations orchardists may face in their operation. Finally the more complex definition is presented and related back to the examples given.

1. How can the principle of diminishing physical returns be used to help improve management decisions in the orchard operation?

   Use the following examples shown below and on TM/HO II-1/3/2,3, and 4 to define the principle of diminishing physical returns and to illustrate some uses in making orchard business decisions.

   a. Ask enrollees if they ever make midnight raids on the cookie jar. Describe a story as follows or one similar for a simple example.

      1) An individual, who shall remain nameless, makes a midnight raid on the cookie jar and discovers to his very great pleasure two dozen Toll House Cookies.

      2) Eating the first and second cookies in rapid succession, he receives an immediate warm sensation of satisfaction from head to toe.

      3) The third cookie tastes very good but just doesn't produce that feeling of "over-eater's" Nirvana that the first two cookies produced, however, he reaches for his fourth cookie.

      4) The fourth cookie still tastes good but he eats it at a much slower pace and even debates 5 seconds before reaching into the jar for the fifth time.

      5) After eating the fifth cookie he realized that grabbing another cookie may only prove to be a conditioned response which results in no satisfaction whatsoever He shrugs and plunges his hand into the increasingly empty jar.

6) He proceeds to eat his sixth cookie and receives no satisfaction whatsoever but actually ends up with severe gastrointestinal discomfort for the remainder of the evening.

7) Use to help explain this "tale" as a classic example of the principal of diminishing returns. Some points to cover:

    a) Cookies equal the input.

    b) The desired output is satisfaction.

    c) The output (satisfaction) increases at a decreasing rate/unit of input (cookie).

    d) The output final declines/unit of input (cookie).

    e) The maximum profit point is the fifth cookie.

b. The principle of diminishing returns is observable in all productive activities. Another example is the increase in amount of fruit per acre resulting from adding hives to the orchard.

1) Use HO/TM-II/1/2 to explain the way in which this example demonstrates the principle of diminishing returns. Some guidelines include:

    a) The desired output is increased fruit per acre.

    b) The input is hives per acre.

    c) As can be seen in this example the added output (fruit per acre) increases at a decreasing rate at point a. of hive addition.

    d) At point b. the output levels off.

    e) Though this data does not go this far it can be assumed that that there is a point where the desired output actually declines.

    f) Point c. would be the point where maximum output occurs.

c. The third example demonstrates the principles through the relationship of yield per acre to increased tree density.

1) Use HO/TM-II/1/3 to help explain the way this relationship demonstrates the principle of diminishing physical returns.

2) The desired output is yield per acre.

3) The input is trees/acre.

4) As can be seen over the range of tree densities the increase in yields resulting from higher tree density declines at about point a.

5) After point b. the output actually declines (?).

6) Point b. is the point where maximum output occurs.

d. All three examples demonstrate in one way or another the principle of diminishing physical returns. This is defined as "a variable input is added to fixed resources, added output increases at a decreasing rate immediately, or after an initial stage of increasing at an increasing rate."

1) This definition assumes that all other input but the one being examined are static.

a) This of course is a rare occurrence in the "real world."

b) Still this principal can help guide economic decisions if the result is tempered with the real world variables that might influence it.

2) Illustrated graphically on TM/HO-II/1/4 the curve of this principle is referred to as a production function.

a) The vertical axis represents the variable output.

b) The horizontal axis represents the variable input.

c) As can be seen, the initial slope increases and then from point a. to point b. increases at a more decreasing amount indicated by the less severe slope.

d) This continues until point c. where the slope actually declines. Point c. is the point of maximum production.

2. How can the principle of diminishing returns be used to determine the maximum profit point?

Use the examples given with question 1 along with information on TM/HO-II/1/5 to demonstrate how to calculate the maximum profit point for these examples.

a. Ask enrollees what point on the production function do they feel is the point of maximum profit.

b. Explain that without cost of the units of input and returns received of additional output they cannot determine the point at which the maximum profits are realized.

c. This is often overlooked by managers who aim strictly at high production at any cost, or aim at cutting costs without relating it back to the effect on returns.

d. For the example of increasing hives per acre to increase yield of fruit the maximum profit point is determined by relating in the cost of hives to the returns for the increased yields.

   1) Have enrollees use the information on TM/HO-II/1/5 to complete the handout TM/HO-II/1/2.

   2) The additional output is calculated by subtracting the previous output from current output.

   3) The total variable input cost is calculated by multiplying the price of the hives times the number of hives.

   4) The Total Value of Production is calculated by multiplying the number of boxes per acre times the returns per box.

   5) The marginal input cost is the total input cost minus the previous input cost.

   6) Finally marginal value of production is the total value of production minus the previous total value of production.

   7) In this example the point of maximum profit is point a. where the marginal input cost of the hives is less than the marginal value of production of the increased yields.

   8) In other words up to that point a manager is making money off each additional hive he adds to the orchard.

e. The example of increasing planting density to increase yields is a little more complicated to determine the cost of the input (since it means more than initial cost of the trees) and return.

1) Have enrollees use the information on TM/HO-II/1/5 to complete the Handout TM/HO-I/1/3.

2) The procedure is similar to the hive example.

3) The additional output is calculated by subtracting the previous yield per acre from this line.

4) The total variable input cost is calculated by multiplying the variable production cost/tree for the different densities times the number of trees.

5) The total value of production is calculated by multiplying the number of boxes per acre of yield times the returns per box.

6) The marginal input cost is then the total input cost minus the previous input cost.

7) Finally the marginal value of production is the total value of production minus the previous total value of production.

8) In this example the maximum profit point is a. This is where the marginal cost of each additional input for the tree is less than the marginal return of the additional boxes of fruit produced.

9) Up to this point the orchardist is making money on his increased planting density. If he undershoots this he is not maximizing profit because he could be "making more" at the next step. If he overshoots this he is losing money by a reduction in his returns.

f. These 2 examples demonstrate the princople of maximum profit which is "to maximize profits, add increments of a variable input as long as the value of the added output resulting from the last unit of input, is greater than or equal to the cost of that last unit of input."

1) At this point an increase or decrease in variable input will result in lower net returns.

2) Again it must be remembered that all other variables are considered to be fixed. So any calculations resulting are not finite but must be tempered with other outside pressure.

3) The analysis of added cost effect on added returns is called marginal analysis.

4) Information for this type of analysis can be obtained or extrapolated from historic records, experience of other individuals with certain cultural practices, extension specialists and fieldmen.

3. How can the equi-marginal principle be used to help improve management decisions in the orchard operation?

Use the following examples, along with TM/HO-II/1/6,7, and 8 to illustrate the equi-marginal principle and demonstrate how it can be used in the orchard operation.

a. Ask enrollees for a show of hands of any who enjoy hunting or fishing.

1) There once was an avid outdoorsman who every year ran out of time before he got some of his favorite game. There seemed to be a scarcity of time in the hunting seasons. Not enough weekends to the season, nor enough hours to the day.

2) He decided to be a little more scientific and allocate his time to the most beneficial outcome.

a) First he made a list of all game he wished to hunt.

b) Next he listed the time each would require for the hunt.

c) Finally he determined what to use as "return" for his time to be pounds of meat gained. (He was an economist more than a sportsman.)

d) When his list was complete it looked like this.

Game	Hrs Hunt/Fish	Lbs Gained	Hrs/Lb
(1) Bear	10	500	50
(2) Chukkar	25	.5	
(3) Deer	8	250	
(4 Elk	10	400	
(5) Pheasant	4	.75	
(6) Trout	4	1	
(7) Steelhead	15	5	

e) In the last step he divided the pounds gained by the hours needed to obtain one kill and listed that.

        f) He calculated the total hours he had to work with during the whole hunting and fishing season and then distributed them to the game that yield the most pounds of meat per hour of hunt.

    3) This example is a classic illustration of the equi-marginal principle in which:

        a) The scarce resource or input in this example being time.

        b) The desired outcome is pounds of meat.

        c) The possible alternatives among which to distribute this scarce resource is the different game.

b. In orcharding often one of the most limited resources is capital. Hopefully these situations can be avoided in the short run by cashflow planning but often long term goals will be under the limits of capital. The equi-marginal principle can be used to make the most profitable use of capital you have. The following is a hypothetical example:

    1) Use TM/HO-II/1/6 to demonstrate how the equi-marginal principle can be used to allocate a set amount of capital to the most profitable alternatives.

        a) In this example the list of alternatives is made up of important goals for 3 different enterprises.

        b) The cost of each alternative is then listed.

        c) The returns projected for each alternative are estimated.

        d) Finally the returns per dollar of investment is calculated by dividing the return of each alternative by the cost of that alternative.

        e) Upon completing this kind of analysis it becomes evident that alternative c. is the most profitable, with alternative b. being the second most profitable. So the money is allocated to the most profitable resources until it is satisfied and then to the next most profitable until it is satisfied. This is done until all the available capital is used up.

c. The final example examines the best means of allocating managers time.

 1) Use TM/HO-II/1/7 to demonstrate how to determine the best alternatives available.

  a) In this example the list of alternatives is made up of 3 possible tasks the orchardist could do with his time.

  b) The "cost" of each alternative is then estimated which is in this case the hours of labor needed to accomplish each task.

  c) The returns are then projected for each task.

  d) Finally the return per dollar of investment is calculated by dividing the returns by the cost of that alternative.

  e) Once again the completion of this kind of analysis will aid in making the decision of where to allocate their time.

d. These three examples illustrate equi-marginal principle which is defined as "if a scarce resource is to be distributed among two or more uses, the highest total return is obtained when the return per unit of the scarce resource is equal in all alternative uses."

 1) Equi-marginal principle helps orchardists realize no single economic decision is an isolated event.

 2) It is a given that no resource will be used past the point of maximum profit.

 3) Some other situations where consideration of this principle may prove helpful is in looking at allocating such scarce resources as land, labor, water, equipment.

4. How can the principle of substitution be used to improve management decisions in the orchard operation?

Use the following examples along with TM/HO-II/1/9 and, 10 to illustrate the principle of substitution and to demonstrate some uses in the orchard business.

a. Once again we return to our economic hunter to demonstrate the principle of substitution. To aid in his bird hunting this year he desires a 12 gauge shotgun for hunting.

   1) On the one hand he could purchase an over under Browning Citori at $950 or a Remington 870 pump at $350.

   2) Being the no frills economist that he is his desired output is game.

   3) Therefore he chooses the least expensive input, the Remington 870, that will result in desired output-game.

b. Often times alternatives for production resources are available but whether they are cost effective needs to be determined. For example types of fertilizers can often be substituted and result in the same end product, optimum fertility in the crop, but reduce the cost of that return.

   1) Use TM/HO-II/1/9 to demonstrate the principle of substitution in the use of calcium nitrate vs ammonium nitrate and lime as a nitrogen source in orchards.

   2) The first step used to calculate the effectiveness of substituting these products is to determine the substitution rate.

      a) This is determined by calculating the amount of calcium nitrate for a given fertilizer recommendation by the amount of ammonium nitrate and lime needed for the recommendation.

      b) Then the amount of calcium nitrate substituted (in this case all of it is divided by the amount of ammonium nitrate and lime needed.

   3) Next the price ratio is determined by dividing the added price per unit by the price saved per unit.

   4) A comparison of these two ratios will indicate which of the two alternatives should be used.

   5) If the substitution ratio is greater than the price ratio then the added input should be used.

c. Another similar example of the substitution principle is the alternative of different chemicals on controlling plant pests.

1) Use TM/HO II/1/10 to demonstrate the principle of substitution in the use of Diathane vs Mitac for the control of pear psylla.

2) In this example the Diathane is the less expensive material.

d. Each of these examples demonstrates the principle of substitution in relation to orchard business management. This principle is defined as "when two (or more) inputs can be combined in varying amounts to produce a given output, it is economical to substitute input A for input B if the additional cost of A is less then the amount saved on B."

1) For most examples in orchards substitution will be applied so that one or the other alternative will be used, not a combination of the two.

2) Some other possibilities that substitution may be used for are:

a) Comparison of machinery substituting for labor.

b) Comparison of chemical vs hand thinning combinations.

c) Comparison of chemical weed control measures.

d) Substituting one training technique for the other.

e) Substituting one fireblight practice for another.

F. Group Discussion

Encourage a discussion of how enrollees have used these principles in their day to day operation. Ask enrollees how they might use these principles in the future. Help them identify sources of cost and return information they could use with these principles to analyze their operations.

G. Conclusions

1. The principles of diminishing physical returns used in combination with the prices of returns and cost of input can be used to determine the maximum profit point.

2. The maximum profit point is the point at which any additional input or decrease of input will reduce the profit.

3. These two principles assume all other inputs but the one being examined are fixed.

4. For use in the "real world" once the maximum profit point is determined, extraneous variables should be taken into consideration before using that information in the orchard operation.

5. The equi-marginal principle helps orchardists use scarce resources in the most profitable manner.

6. Both short term and long term scarce resources can be effectively allocated using equi-marginal analysis.

7. Allocating capital, labor, management time, land, equipment and irrigation application can be done using the equi-marginal principle.

8. The substitution principle can help orchard managers determine the most cost effective alternatives of production variables.

9. In most situations the substitution principle will relate to "either or" situations rather than the proper combination of 2 variables.

10. The substitution principle is important to bear in mind when deciding between such production variables as fertilizers, pesticides, machinery vs labor, chemical vs hand thinning.

H. Orchard Visit

On visits following this lesson discuss with enrollees how they might use These principles in their operation and where in their records they might gather information for that analysis.

I. Materials Needed

Instructor/Enrolees:

TM/HO-II/1/1	Contents of Unit II
TM/HO-II/1/2	Diminishing Physical Returns Example 2
TM/HO-II/1/3	Diminishing Physical Returns Example 3
TM/HO-II/1/4	Law of Diminishing Physical Returns
TM/HO-II/1/5	Financial Information Example 2 and 3

TM/HO-II/1/6	Equi-marginal Principle - Example 2
TM/HO-II/1/7	Equi-marginal Principle - Example 3
TM/HO-II/1/8	Equi-marginal Principle
TM/HO-II/1/9	Substitution - Example 2
TM/HO-II/1/10	Substitution - Example 3

TM/HO-II/1/1

COURSE CONTENTS - UNIT II
MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

Lesson 1: Economic Principles Important to Orchard Business Management

Lesson 2: Analyzing Enterprise Returns To Costs

Lesson 3: Income Tax Management Techniques

Lesson 4: Closing the Record Book for Analysis

Lesson 5: Using the Concepts of Time Value of Money

Lesson 6: Utilizing Farm Credit

Lesson 7: Planning Partial Budgets Using Packout Records

Lesson 8: Determining the Economic Feasibility of Replanting Orchards

Lesson 9: Marketing Washington Fruit

Lesson 10: Labor Management Techniques

Lesson 11: Organizing the Orchard Business

Lesson 12: Estate Planning

Lesson 13: Options for Computerized Record Keeping

LAW OF DIMINISHING PHYSICAL RETURN

EXAMPLE 2

IN THIS HYPOTHETICAL EXAMPLE AN ORCHARDIST EXPERIMENTS WITH THE RESULTS OF DIFFERING AMOUNTS OF BEE HIVES PER ACRE AND THE EFFECT ON YIELDS IN SEVERAL OF HIS D'ANJOU PEAR BLOCKS. HE CONSIDERS ALL FOUR BLOCKS EQUAL IN CULTURAL PRACTICES EXCEPT FOR THE VARIATION IN HIVES. AFTER THREE YEARS HE COMES UP WITH THE FOLLOWING RESULTS:

	INPUT # HIVES/A	OUTPUT # PACKED BOXES/A	ADDED OUTPUT	MARGINAL INPUT COST	MARGINAL VALUE OF PRODUCTION	MAXIMUM PROFIT POINT
A	0	420				
B	1	520	100	29	$800	
C	2	530	10	29	$ 80	XX
D	3	532	2	29	$ 16	

THE LAW OF DIMINISHING PHYSICAL RETURNS

EXAMPLE 3

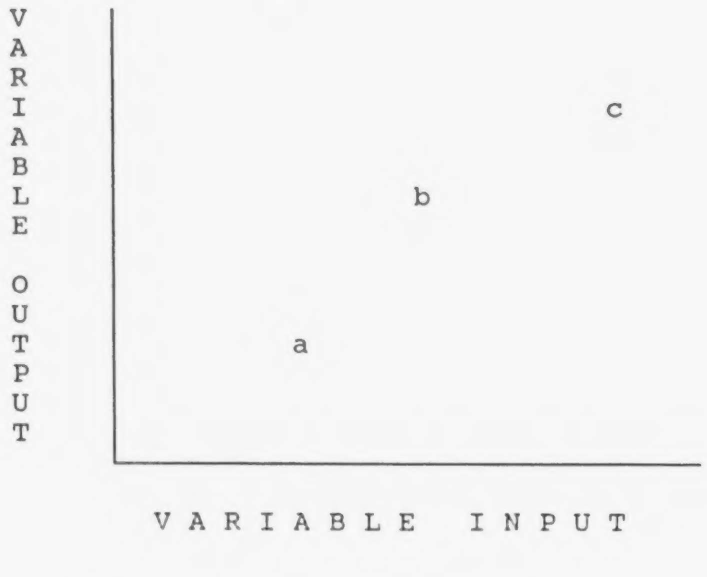
IN THIS EXAMPLE THE LAW OF DIMINISHING PHYSICAL RETURNS IS DEMONSTRATED BY THE EFFECT OF PLANTING DENSITIES IN YIELD PER ACRE FOR FIVE YEAR OLD TREES.

	INPUT	OUTPUT # TREES PER ACRE	ADDED INPUT # BOXES PER ACRE	MARGINAL INPUT COST	MARGINAL VALUE OF PRODUCTION	MAXIMUM PROFIT POINT
A						
B						
C						
D						

TM/HO-II/1/4

LAW OF DIMINISHING PHYSICAL RETURN

". . . AS A VARIABLE INPUT IS ADDED TO FIXED RESOURCES, ADDED OUTPUT INCREASES AT A DECREASING RATE IMMEDIATELY, OR AFTER AN INITIAL STAGE OF INCREASING AT AN INCREASING RATE."


VARIABLE OUTPUT
c
b
a
VARIABLE INPUT

FINANCIAL INFORMATION FOR EXAMPLES 1 AND 2

EXAMPLE 1:

COST PER HIVE = $29.00

GROWER RETURN PER PACKED BOX = $8.00

EXAMPLE 2:

EQUI-MARGINAL PRINCIPLE

EXAMPLE 2

IN THIS EXAMPLE AN ORCHARDIST HAS ALLOCATED $27,000 IN ONE SEASON WITH WHICH TO MAKE CAPITAL IMPROVEMENTS TO HER OPERATION.

HER THREE GOALS FOR THE COMING SEASON ARE TO PUT SOLID SET MICROJET IRRIGATION IN A FIVE ACRE BLOCK OF PEARS. THIS BLOCK IS CURRENTLY IRRIGATED BY HAND LINES AND CONTAINS NUMEROUS FROST POCKETS.

SECONDLY SHE WANTS TO INTERPLANT RED D'ANJOU PEARS IN A TEN ACRE BLOCK OF DECLINING D'ANJOUS.

HER THIRD GOAL IS TO PURCHASE A NEW AIR BLAST SPRAYER THAT WILL IMPROVE HER SPRAY COVERAGE AND REDUCE HER PEAR PSYLLA IN HER PEAR BLOCKS.

AFTER TALKING WITH HER FIELDMAN AND COUNTY EXTENSION AGENT AND STUDYING OLD RECORDS SHE DETERMINED THE FOLLOWING COSTS AND RETURNS FOR EACH ALTERNATIVE:

	ALTERNATIVE	TOTAL CAPITAL INVEST.	TOTAL RETURNS FOR YEARS	TOTAL RETURN PER TOTAL COST	ALLOC.
A	SS IRR. MICROJET	$7,500	$9,298	1.24	$5,440
B	REPLANT D'ANJOU	$7,560	$11,393	1.51	$7,560
C	AIR BLAST SPRAYER	$14,000	$23,990	1.71	$14,000

EQUI-MARGINAL PRINCIPLE

EXAMPLE 3

IN THIS EXAMPLE A PEAR ORCHARDIST CALCULATES HE WILL HAVE 12 ADDITIONAL HOURS PER WEEK OR 324 HOURS OVER THE SEASON TO ALLOT TO THREE POSSIBLE TASKS.

THE THREE TASKS HE WOULD LIKE TO ACCOMPLISH ARE MOWING THE ORCHARD, MONITORING THE ORCHARD FOR PEAR PSYLLA, AND CALCULATING HIS IRRIGATION REQUIREMENT AS WELL AS MONITORING HIS APPLICATION MORE CAREFULLY.

AFTER TALKING WITH HIS FIELDMAN HE DETERMINES HE COULD REDUCE HIS CULLAGE FROM PSYLLA DAMAGE BY TWO PERCENT. BY CAREFUL MONITORING AND MORE PROPER TIMING OF HIS IRRIGATION, HE COULD RAISE HIS AVERAGE YIELD BY FOUR PERCENT.

MOWING THE ORCHARD HIMSELF WOULD SAVE TEN CENTS AN HOUR OVER THE WAGE HE PAYS THE EMPLOYEES. HE DETERMINES THE FOLLOWING COSTS IN HOURS/WEEK AND RETURNS FOR EACH ALTERNATIVE. THESE FIGURES ARE FOR A 40 ACRE PEAR ORCHARD.

	ALTERNATIVE	HOURS PER WEEK	OVER SEASON RETURN PER 40 ACRE	OVER SEASON RETURN PER HR PER WK	ALLOC
A	CALCULATE & MONT.IRR.	3.50x27WK $94.50	$9282.00	$98.22	3.50 HRS.
B	MONITOR PSYLLA	6.50x27WK $175.50	$6447.00	$36.75	6.50 HRS.
C	MOW ORCHARD	10.53x27W $284.31	$2843.00	$10.00	2.00 HRS.

TM/HO-II/1/8

EQUI-MARGINAL PRINCIPAL

". . . IF A SCARCE RESOURCE IS TO BE DISTRIBUTED AMONG TWO OR MORE USES, THE HIGHEST TOTAL RETURN IS OBTAINED WHEN THE RETURN PER UNIT OF THE SCARCE RESOURCE IS EQUAL IN ALL ALTERNATIVE USES."

SUBSTITUTION PRINCIPLE

IN THIS EXAMPLE A GROWER IS DECIDING BETWEEN THE USE OF CALCIUM NITRATE OR AMMONIUM NITRATE AND LIME AS HIS SOURCE OF NITROGEN. CALCIUM NITRATE IS 15 % ACTUAL NITROGEN, AND COST 10 CENTS A POUND, WHEREAS AMMONIUM NITRATE IS 33 % NITROGEN AND COSTS 9 CENTS PER POUND. HE KNOWS IF HE USES AMMONIUM NITRATE HE NEEDS 1.5 POUNDS OF DOLOMITIC LIME TO NEUTRALIZE EACH POUND OF NITROGEN. HIS QUESTION IS WHICH WILL BE CHEAPER TO USE.

FOR EACH POUND OF NITROGEN

$$\text{CaNO}_3 = 15\ \%\ \text{N}$$

$$\frac{1}{.15} = \frac{6.67\ \#\ \text{CaNO}_3}{1\ \#\ \text{N}}$$

$$6.67 \text{ X } .103 = \underline{\underline{\$.69/\text{LB N}}}$$

$$\text{NH}_4\text{NO}_3 = 33\ \%\ \text{N}$$

$$\frac{1}{.33} = \frac{3.03\ \#\ \text{NH}_4\text{NO}_3}{1\ \#\ \text{N}} + \frac{1.5\ \#\ \text{LIME}}{1\ \#\ \text{N}}$$

$$(3.03 \text{ X } .092) + (.04 \text{ X } 1.5) = \underline{\underline{\$.338/\text{LB N}}}$$

SUBSTITUTION PRINCIPLE

EXAMPLE 3

IN THIS EXAMPLE A GROWER MAY CHOOSE BETWEEN 2 TREATMENTS WHICH WILL YIELD SAME CONTROL ON PEAR PSYLLA.OPERATION.

HE MAY CHOOSE A MITAC COVER SPRAY AT 3 # PER ACRE OR A LATE SUMMER DIATHANE COVER AT 20# PER ACRE

HE WANTS TO KNOW THE LEAST EXPENSIVE ALTERNATIVE.

MITAC 17.79/LB. = $53.37/ACRE

DIATHANE 2.09/LB X 20LB = $41.80

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

II. Lesson 2: Analyzing Enterprise Returns to Costs

A. Review

The concepts and conclusions of Lesson 1, Economic Principles Important to Orchard Business Management should be reviewed. Allow time to discuss any questions about the previous lesson. Some possible conclusions include:

1. The principle of diminishing physical returns used in combination with the prices of returns and cost of input can be used to determine the maximum profit point.
2. The maximum profit point is the point at which any additional input or decrease of input will reduce the profit.
3. The principle of diminishing physical returns and maximum profit point assume all other input but the one being examined are fixed.
4. For use in the "real world" once the maximum profit point is determined, extraneous variables should be taken into consideration before using that information in the orchard operation.
5. The equi-marginal principle helps orchardists use scarce resources in the most profitable manner.
6. Both short term and long term scarce resources can be effectively allocated using equi-marginal analysis.
7. Allocating capital, labor, management time, land, equipment and irrigation application can be done using the equi-marginal principle.
8. The substitution principle can help orchard managers determine the most cost effective alternatives of production variables.
9. In most situations the substitution principle will relate to "either or" situations rather than the proper combination of 2 variables.

10. The substitution principle is important to bear in mind when deciding between such production variables as fertilizers, pesticides, machinery vs labor, chemical vs hand thinning.

B. Objective

Classify enterprise costs and analyze returns to costs.

C. Motivation

1. Ask enrollees how often they have heard the following terms for costs; cash vs non-cash costs, fixed vs variable costs, sunk costs, short run vs long run costs, opportunity costs.
2. Now ask enrollees if they can fit their business costs neatly into one or more of these categories and if so why do they need to.
3. Explain that in their orchard business they will no doubt have run into one or more of these terms. All costs in their operation fit in one or more of these categories!
4. Knowing where to apply the principles of these terms in dealing with particular business costs is really not complicated and can help decide which costs are important at a particular time for a particular decision making process.

D. Key Questions

1. How are costs classified?
2. What are the guidelines for distributing overhead costs to specific enterprises.
3. What are the guidelines for completing a summary of enterprise fixed and variable costs?

E. Introduction of Information

1. How are costs classified?

   Use TM-II/2/1 to help define information about various cost categories. Try to use specific examples from enrollees operations to illustrate these different costs.

   a. Cash versus non-cash costs.

      1) Not all costs involve the exchange of cash.

2) Cash costs are often easy to account for as input or expenses to production.

   a) Form 2, Distribution of Expenditures lists common expenses to the orchard operation and many of these cash costs can be directly applied to specific enterprises.

   b) These costs are often referred to as explicit costs.

   c) For short run decisions cash costs are the most important and covering these will insure the continuation of the operation.

   d) In the long run, however, looking at cash costs exclusively will lead to business failure.

3) Non-cash costs are most often overlooked in analyzing the operation because they are the cost in which actual cash does not change hands.

   a) These include items such as interest on owner's equity, unpaid operator/family labor and depreciation.

   b) These are often referred to as implicit costs.

   c) These costs are often difficult to charge to individual enterprises. However, unless these are allocated (or distributed) to the total operation as well as enterprises, costs will be understated.

b. Fixed versus Variable Costs.

1) Fixed costs are those costs which do not relate to the volume of output.

   a) These are often referred to as overhead or ownership costs.

      (1) The term ownership cost comes from the nature of these costs that is they are based on ownership of the operation i.e. taxes, interest, insurance.

      (2) The term overhead costs are often difficult to allocate to specific enterprises because they lack a specific product outcome.

b) Fixed costs must be paid no matter what the orchard yields; a bumper crop or frost ringed mess. They are consistent for a specified period of time.

c) Fixed costs normally include the "DIRTI 5". TM-II/2/2.

(1) Depreciation (though there is, debatabley, some depreciation influenced by production levels.)

(2) Interest

(3) Repairs (Though there is some question whether some machinery and equipment repairs aren't influenced by production level.)

(4) Taxes

(5) Insurance

d) Fixed Costs cannot be controlled in the short run.

2) Variable costs are costs which vary as production varies over a given period of time.

a) These are often referred to as operating or production costs.

b) Variable costs have a closer relationship to production outputs. For example; applying Mitac to control psylla has a direct relationship to output through improved quality of fruit.

c) Variable costs can increase with increasing level of production. For example total labor costs increase with a larger harvested crop.

d) In the short run variable costs are the most important in determining whether to make certain production decisions.

3) It is critical to understand how fixed and variable costs react on a per unit basis to be able to make good decisions in terms of deciding at what point to produce or whether to purchase new or used equipment.

a. The graph on TM-II/2/3 is designed to illustrate the way in which fixed and variable costs respond on a per unit basis.

b. Use the graph to reinforce the principles of fixed and variable costs. They are;

   1) Fixed costs will become less per acre and/or per bin as the units increase.

   2) Variable costs will remain basically constant per unit (/bin or /acre) at varying levels of units.

   3) Generally the more fixed costs are used i.e. the more units produced or formed, the less total costs per unit.

   4) High fixed costs or overhead costs are a real noose in times of poor profitability since they must be paid regardless of the level of production.

   5) It is important to make sure both fixed and variable costs are met in the long run and that an orchardist is not depending on inflation to dissolve fixed costs as was done so often in the past.

c. Sunk costs are costs which have already been used in the business.

   1) These costs very closely resemble fixed costs in behavior in that it will remain the same no matter what the level of production. However it is not limited to fixed cost items but generally refers to variable costs which have been used.

   2) An example would be fertilizer or lime applied. Once these products have been applied they are said to be sunk. And no managerial decisions can change that fact. Managers have no control over this cost once it is sunk.

3) It is important that managers take sunk costs into consideration when making short term decisions about the operation.

4) An example would be an orchardist deciding whether to harvest a crop or not when suffering a bad year due to high cullage. At this point in time the orchardist need only cover harvest and storage costs because all other costs to date are "sunk".

d. Opportunity costs are important to recognize in managerial decision making. This is the cost of making one decision over another.

1) Opportunity costs are incurred in any managerial decision of the operation.

2) The opportunity cost of using resources such as capital, time, etc. is the "returns foregone" from using it in another way.

3) For example there is an opportunity cost in investing in orcharding and that cost is equal to the returns not realized from investing in another business, stocks or savings.

2. What are the guidelines for distributing overhead costs to specific enterprises?

Using TM/HO-22 and TM/HO-II/2/4 demonstrate how yearly totals from the overhead enterprise are distributed to enterprises in the operation.

a. Throughout this past year of keeping records enrollees will no doubt have found it fairly easy to allocate many variable costs to specific enterprises. However most will have placed all fixed costs and many variable costs, such as utilities into the overhead enterprise.

b. As described in lesson 5 of Unit I costs not readily allocated to specific enterprises are allocated to an overhead enterprise where the yearly totals are the allocated to specific enterprises.

c. There are several ways to distribute overhead costs to various enterprises in the orchard.

  1) Percentage returns method. Under this method overhead costs are distributed to enterprises by the percentage of total crop returns they contribute.

    a) The percentage is calculated by dividing the total crop sales for a given enterprise by the total of all crop sales.

    b) One disadvantage of this method is that it only takes gross returns into consideration.

  2) Percentage of total variable cost. Under this method overhead costs are distributed according to the percentage of total variable costs attributed to this enterprise.

    a) This is calculated by dividing total allocated variable costs or total of all costs for that enterprise for the year by the total of all coats for all enterprises but the overhead enterprise.

    b) One disadvantage of this method is some enterprises will require a high percentage of variable costs in relation to returns.

  3) Percentage of Labor. Using this method, overhead costs are distributed according to the percentage of total paid labor attributed to each enterprise.

    a) To calculate percentages for this method total labor costs for each enterprise should be divided by labor costs for all enterprises but the overhead enterprise.

    b) Again the drawback here comes from a discrepancy of high labor enterprises (such as high density plantings) incurring more than their fair share of overhead costs.

  4) Combined method and common sense. This makes use of one or more of the previous methods tempered by the common sense or managerial feel of the operator.

a) This will probably mean the primary enterprises will receive the lion's share of overhead, while supplementary and complementary enterprises will receive a proportionally lesser share.

b) Though calculating each of the first three methods may seem time consuming it need only be done once a year and these calculations coupled with the managers common sense could help come up with accurate percentages.

d. Depreciation may need to be allocated in a combination method.

1) For some simply adding up the total depreciation from the tree, machinery and building depreciation schedules and allocating by percentage will suffice.

2) In most cases some depreciation should be allocated directly to an enterprise.

a) In many cases tree depreciation will directly allocate to a specific enterprise.

b) Pieces of machinery which are primarily used for one enterprise should be directly allocated to that enterprise.

c) The remainder of depreciated items not specifically allocated can then be allocated using the previous methods.

e. Once the breakdown method and accompanying percentages are determined, Form 22 Distribution of Overhead Costs may be completed.

1) The enterprise numbers should be listed across the top of the form.

2) Next all cost categories in which values were entered on form 3 of the overhead enterprise should be written in the cost category.

3) Enter the date these totals cover. Normally a one year period.

4) Enter the total for each cost category in column 4.

5) Enter the percentage allocation for each enterprise for each cost category.

    a) As this technique is refined different percentage break downs may be used for different costs.

    b) Remember to make sure the percentages add up to 100.

6) Multiply the percentages times the annual total and enter in the $ column. Remember to add in depreciation amounts that are directly allocated to specific enterprises.

7) Make sure the added dollar amounts equal the yearly total.

3. What are the guidelines for completing a summary of enterprise fixed and variable costs?

Using TM/HO-23 and TM/HO-II/2/4 demonstrate completing Form 23, Summary of Fixed and Variable Costs on the overhead. Have enrollees work along.

a. Explain that fixed and variable costs for this summary have been defined in the "classic" sense with fixed cost being the DIRTI 5. Many orchardists may wish to include other items such as irrigation assessment under fixed cost and need only alter this form to suit their personal needs.

b. Before completing form 23, yearly totals should be completed on Form 3, Enterprise Expense Allocation, for all enterprises.

c. Enter the enterprise number on column 1.

d. Enter the total cost from the corresponding cost category from Form 3 for this enterprise. Repeat this procedure for each cost category.

e. Now turn to the completed form 22 and enter the corresponding distributed overhead costs into the appropriate cost category of Form 23, for this enterprise.

   f. Repeat this procedure for all cost category values.

   g. Repeat this procedure for each enterprise in the operation.

   h. When all enterprises have been entered go back to the first enterprise and add the gross pay for all job categories plus the sum of columns 18 through 33 and enter that amount in the total variable cost column 34.

   i. Next enter the sum of columns 35 through 40 in the total fixed cost column 41.

   j. The total cost column is equal to column 34 plus column 40.

   k. Enter the number of units in column 43. This amount should be listed under this enterprise on the crop inventory of Form 16.

   l. Enter the total variable cost per unit by dividing column 34 by column 43.

   m. Next enter the total fixed cost per unit by dividing column 41 by column 43.

   n. The total costs per unit is equal to the sum of column 44 plus column 45.

4. Fixed costs normally refer to the "DIRTI 5".

5. Variable costs vary as production varies over a given period of time.

6. Variable costs have a closer relationship to production output.

7. Fixed costs do not vary with the level of output and decrease on a per unit basis with increased output.

8. High fixed costs are a real noose in times of poor profitability since they must be paid regardless of the level of production.

9. Sunk costs often refer to variable costs which have been used.

10. Opportunity costs are those costs associated with making one decisions over another.

F. Orchard Visit

On the orchard visit following this lesson help enrollees complete Forms 22 and 23 on the previous years records.

I. Materials Needed

Instructor/Enrollees:

Orchard Business Management Record Book

TM-II/2/1	Cost Classifications
TM-II/2/2	"DIRTI 5"
TM-II/2/3	Reaction of Fixed and Variable Costs on a Per Unit Basis
TM/HO-II/2/4	Sample Entries Forms 22 and 23
TM/HO-22	Distribution of Overhead Costs
TM/HO-23	Summary of Fixed/Variable Costs

TM-II/2/1

COST CLASSIFICATIONS

- * CASH VERSUS NON-CASH COSTS
- * SHORT RUN VERSUS LONG RUN COSTS
- * FIXED VERSUS VARIABLE COSTS
- * SUNK COSTS

TM-II/2/2

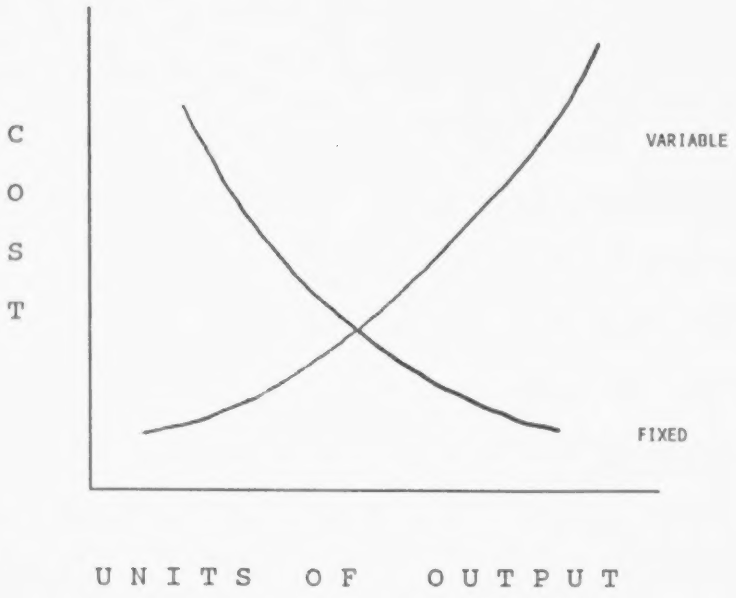
D.I.R.T.I. 5

(FIXED COSTS)

- * DEPRECIATION
- * INTEREST
- * REPAIRS
- * TAXES
- * INSURANCE

TM-II/2/3

FIXED-VARIABLE COSTS REACTION TO OUTPUT



SAMPLE ENTRIES FOR SUMMARY OF FIXED/VARIABLE COST AND DISTRIBUTION OF OVERHEAD COSTS

The following information will aid in completing the summary of fixed and variable costs. Those costs not specifically designated to a enterprise should be entered after the percentage is allocated on the Distribution of Overhead Costs.

1). Enterprise 121 had the following yearly totals:

a). Pruning labor - 761 trees - 1826.40
b). Irrigation - 280 hours - 1400.00
c). Chem.. App. - 63.7 hours - 414.05
d). Harvest - 189 Bins - 2846.50
e). Mowing 19.80 hours - 99.00
f). General Labor - 25 hours 125.00
g). Pest Control 2217.58
h). Fert./Lime - 372.59
i). Replacement Trees - 63.00
j). Warehouse Charge - 20641.12
K). Industry Charge - 817.42

2). Enterprise 122 had the following yearly totals:

a). Pruning - 307 trees - 736.80
b). Irrigation - 114 hours - 570.00
c). Chem. App. - 25.7 hours - 167.05
d). Harvest - 78 Bins - 1345.50
e). Mowing - 8 hours - 40.00
f). General Labor - 8 hours - 40.00
g). Pest Control - 896.47
h). Fert./Lime - 150.62
i). Replacement Trees - 63.00
j). Warehouse Charge - 9877.84
K). Industry Charge- 390.94

3). Enterprise 211 had the following yearly totals:

a). Pruning - 755 trees - 1812.00
b). Irrigation - 280 hours - 1400.00
c). Thinning - 755 trees - 1321.25
d). Chem. App. - 71 hours - 461.50
e). Harvest - 135 Bins - 2506.25
f). Mowing - 19 hours - 95.00
g). General Labor - 24 hours - 120.00
h). Pest Control - 1800.99

i). Fert./Lime - 547.36
j). Replacement Trees - 72.00
j). Warehouse Charge - 16153.92
K). Industry Charge- 639.72

4). Enterprise 212 had the following yearly totals:

a). Pruning - 290 trees - 696.00
b). Irrigation - 114 hours - 570.00
c). Thinning - 290 trees - 507.50
d). Chem. App. - 28.8 hours - 187.20
e). Harvest - 85 Bins - 1326.00
f). Mowing - 7 hours - 38.00
g). General Labor - 8 hours - 40.00
h). Pest Control - 728.06
i). Fert./Lime - 221.27
j). Replacement Trees - 58.50
j). Warehouse Charge - 7179.52
K). Industry Charge- 284.32

5). Enterprise 313 had the following yearly totals:

a). Pruning - 750 trees - 1725.00
b). Irrigation - 56.4 hours - 282.00
c). Thinning - 750 trees - 937.50
d). Chem. App. - 71 hours - 461.50
e). Harvest - 240 Bins - 3466.00
f). Mowing - 20 hours - 102.00
g). General Labor - 24 hours - 120.00
h). Pest Control - 1800.99
i). Fert./Lime - 547.36
j). Replacement Trees - 31.50
k). Warehouse Charge - 25128.32
l). Industry Charge- 995.12
m). Irrigation Depreciation - 114.20

6). Enterprise 314 had the following yearly totals:

a). Pruning - 300 trees - 690.00
b). Irrigation - 22.8 hours - 114.00
c). Thinning - 300 trees - 525.00
d). Chem. App. -28.8 hours - 187.20
e). Harvest - 102 Bins - 1547.00
f). Mowing - 8 hours - 40.00
g). General Labor - 6 hours - 30.00
h). Pest Control - 728.06
i). Fert./Lime - 221.27
j). Replacement Trees - 22.50
k). Warehouse Charge - 10769.28
l). Industry Charge- 426.48
m). Irrigation Depreciation - 46.17

7). Enterprise 415 had the following yearly totals:

a). Pruning - 2813 trees - 1406.50
b). Irrigation - 40 hours - 200.00
c). Chem. App. - 50.5 hours - 328.25
d). Mowing - 14.4 hours - 72.00
e). General Labor - 24.4 hours - 122.00
f). Pest Control - 1277.30
g). Fert./Lime - 388.20
h). Replacement Trees - 22.50
i). Interest - 1250.32
j). Irrigation depreciation - 2467.50

8). Enterprise 531 had the following yearly totals:

a). Pruning - 300 trees - 735.00
b). Irrigation - 100 hours - 500.00
c). Chem. App. - 15.5 hours - 100.75
d). Harvest - 900 hours - 6300.00
e). Mowing - 6.5 hours - 33.00
f). General Labor - 10 hours - 50.00
g). Pest Control- 241.65
h). Fert./Lime - 108.00
i). Replacement Trees - 54.00
j). In Charge - 3198.57
k). Out Charge - 5329.37
l). Industry Charge - 700.08

9). Enterprise 532 had the following yearly totals:

a). Pruning - 99 trees - 242.55
b). Irrigation - 33 hours - 165.00
c). Chem. App. - 5 hours - 32.50
d). Harvest - 300 hours - 1950.00
e). Mowing - 2.2 hours - 11.00
f). General Labor - 5 hours - 25.00
g). Pest Control- 80.55
h). Fert./Lime - 22.50
i). Replacement Trees - 22.50
j). In Charge - 821.73
k). Out Charge - 1355.44
l). Industry Charge - 179.53

10). Enterprise 533 had the following yearly totals:

a). Pruning - 98 trees - 240.10
b). Irrigation - 33 hours - 165.00
c). Chem. App. - 5 hours - 32.50
d). Harvest - 288 hours - 1584.00
e). Mowing - 2.2 hours - 11.00

f). General Labor - 5 hours - 25.00
g). Pest Control- 80.55
h). Fert./Lime - 36.00
i). Replacement Trees - 22.50
j). In Charge - 855.54

The following information can be used to complete the distribution of overhead expenses to appropriate enterprises. After completing this form add these values to the Summary of Fixed/Variable Costs.

1). The annual total for the overhead enterprise was as follows:

a). Irrigation Assessment - 2322.00
b). Utilities - 1176.00
c). Fuel/Oil - 2702.00
d). Truck/Auto - 705.00
e). Mach. Maint. - 1143.00
f). Irr/Build maint. - 1061.00
g). Taxes - 8719.00
h). Insurance - 2500.00
k). Interest - 4371.68
l). Employment Taxes (Employer paid) - 5232.64
m). Depreciation (Minus depreciation for specific irrigation) - 6696.79

2). After evaluating these expenses the orchardist decides to allocate the following expenses to enterprises based on their percentage of the total crop acreage.

a). Irrigation Assessment
b). Utilities
c). Taxes
d). Insurance
e). Interest

3) The following expenses use a variation of the % acreage in which an adjustment for the added fuel, wear and tear, and repair associated for more machinery time required in higher density block (415) is adjusted for. The orchardist determines this block requires 25% more machinery trips at a 15

foot spacing between rows resulting in a weighted percentage of 16.25%. The remaining blocks are then adjusted to result in a 100% value. With 10 acre blocks = 16.8%, 3 acre block = 7.2%, and 1 acre blocks = 2.3%.

a). Fuel/Oil
b). Truck/Auto
c). Mach. Maint.
d). Irr/Build Maint.

4) Employment taxes are divided up according to the percentage of the total gross labor each enterprise required. This will prove accurate for FICA, FUTA and State Unemployment Insurance, which are based on gross wages, however some accuracy may be lost in the allocation of Workers Compensation. This is because it is related to hours worked. In most instances this value will prove accurate enough.

FORM 22 YEAR 88

DISTRIBUTION OF OVERHEAD COSTS

PAGE 1

COST CATAGORY	FROM	TO	ANNUAL TOTAL		ENT. #(S): 121			ENT. #(S): 122			ENT. #(S): 211			ENT. #(S): 212			ENT. #(S): 313			ENT. #(S): 314			ENT. #(S): 415		
					%	$		%	$		%	$		%	$		%	$		%	$		%	$	
Irrigation Assessment	1/87	1/88	2322	00	17.5	406	35	7.5	174	15	17.5	406	35	7.5	174	15	17.5	406	35	7.5	174	15	12.5	290	25
Utilities		"	1176	00	17.5	205	80	7.5	88	20	17.5	205	80	7.5	88	20	17.5	205	80	7.5	88	[illegible]	12.5	147	00
Fuel/Oil	"	"	2702	00	16.8	453	93	7.2	194	54	16.8	453	93	7.2	194	54	16.8	453	93	7.2	194	54	16.25	439	08
Truck/Auto	"	"	705	00	16.8	118	44	7.2	50	76	16.8	118	44	7.2	50	76	16.8	118	44	7.2	50	76	16.25	114	56
Mach. Maint.	"	"	1143	00	16.8	192	02	7.2	82	30	16.8	192	02	7.2	82	30	16.8	192	02	7.2	82	30	16.25	185	74
Irr./Cult. Maint.	"	"	1061	00	16.8	178	25	7.2	76	39	16.8	178	25	7.2	76	39	16.8	178	25	7.2	76	39	16.25	172	42
Taxes	"	"	8719	00	17.5	1525	82	7.5	653	93	17.5	1525	82	7.5	653	93	17.5	1525	82	7.5	653	93	12.5	1089	88
Insurance	"	"	2500	00	17.5	437	50	7.5	187	50	17.5	437	50	7.5	187	50	17.5	437	50	7.5	187	50	12.5	312	50
Interest	"	"	4371	65	17.5	765	04	7.5	327	88	17.5	765	04	7.5	327	88	17.5	765	04	7.5	327	88	12.5	546	46
Employment Taxes	"	"	5232	64	15.6	316	27	6.7	350	59	14.1	737	80	7.8	408	14	15.1	790	17	7.3	381	97	4.9	256	40
Depreciation	"	"	6696	19	16.8	1125	16	7.2	482	17	16.8	1125	16	7.2	482	17	16.8	1125	16	7.2	482	17	16.25	1088	[illegible]
Misc. Service	"	"	3000	-	17.5	525	00	7.5	225	00	17.5	525	00	7.5	225	00	17.5	525	00	7.5	225		12.5	375	00
Misc. Supplies	"	"	500	-	17.5	87	50	7.5	37	50	17.5	87	50	7.5	37	50	17.5	87	50	7.5	37	50	12.5	62	50

FORM 22 YEAR

DISTRIBUTION OF OVERHEAD COSTS

PAGE

	ENT. #(S): 531		ENT. #(S): 532		ENT. #(S): 533		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):	
	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$
1	7.5	174 15	2.5	58 05	2.5	58 05												
2	7.5	88 20	2.5	29 40	2.5	29 40												
3	7.15	193 17	2.3	62 14	2.3	62 14												
4	7.15	50 11	2.3	16 22	2.3	16 22												
5	7.15	81 72	2.3	26 29	2.3	26 29												
6	7.15	75 86	2.3	24 40	2.3	24 40												
7	7.5	653 93	2.5	217 97	2.5	217 97												
8	7.5	187 50	2.5	62 50	2.5	62 50												
9	7.5	327 87	2.5	109 29	2.5	109 29												
10	11.7	736 21	5.7	293 26	4.9	252 13												
11	7.15	478 82	2.3	154 62	2.3	154 62												
12	7.5	225 00	2.5	75 00	2.5	75 00												
13	7.5	37 50	2.5	12 50	2.5	12 50												
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FORM 23

SUMMARY OF FIXED/VARIABLE COSTS

PAGE 1 YEAR 88

ENT. #	HIRED LABOR																						
	PRUNING UNITS: Trees		IRRIGATION UNITS: Hours		THINNING UNITS: Trees		CHEMICAL APPL. UNITS: Hours		HARVEST UNITS: Bin/line		Mowing UNITS: Hours		General UNITS: Hours		UNITS:		EMPLOY. TAXES	MISC. BENEFITS /HOUSING	PEST CONTROL	FERT. /LIME	IFR. ASSMNT.	UTILITY	FUEL/ OIL
	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNIT	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY							
121	761	1826	270	1400			63.7	414	189	2847	19.8	99	25	125			216		2218	313	406	206	454
122	301	737	114	570			25.7	167	78	1346	8	40	8	40			351		896	151	174	88	195
211	755	1812	280	1400	755	1321	71	462	135	2506	19	95	24	120			738		1801	547	406	206	454
212	270	696	114	570	290	508	28.8	187	85	1326	7	38	8	40			418		728	221	174	88	195
313	750	1725	56.4	282	750	938	71	462	240	3468	20	102	24	120			790		1201	547	406	206	454
314	250	610	22.8	114	300	525	28.8	187	102	1547	8	40	6	30			382		728	221	174	88	195
415	2813	1466	40	200			50.5	328			14	72	24	122			256		1277	388	290	147	439
									Unit-Hours														
531	300	735	100	500			15.5	101	900	6300	6.5	33	10	50			937		242	108	174	88	193
532	19	243	33	165			5	33	200	1150	2.2	11	5	25			218		81	36	58	29	62
533	18	240	33	165			5	32	288	1584	2.2	11	5	25			256		81	36	58	29	62
	6473	10110	1073.2	5366	2095	3292	365	2373	829 / 1488	22774	106.7	541	139	697			5232		9253	2622	2320	1175	2703

FORM 24

SUMMARY OF FIXED/VARIABLE COSTS

2 YEAR 88

			WAREHOUSE CHARGES			OTHER EXPENSES													COSTS/UNIT OF HARVESTED FRUIT			
	TRUCK/ AUTO	REPLACE TREES	PACKING/ HANDLING	CROP STORAGE	IND. CHG.	Misc. Service	Misc. Supplies			TOTAL VARIABLE COSTS	MACH. MAINT.	IRR./ BUILD. MAINT.	TAXES	INSUR.	INTEREST	DEPREC.	TOTAL FIXED COSTS	TOTAL COSTS	BINS/ LUGS # UNITS	TOTAL VARIABLE COST/ UNIT	TOTAL FIXED COST/ UNIT	TOTAL COST/ UNIT
1	112	63	20241		217	525	82			33436	172	178	1526	433	765	1125	4224	37660	189	176.91	199.26	376.17
2	51	27	9817		241	225	25			15364	82	76	651	181	328	482	1809	17173	78	196.97	220.17	417.14
3	118	72	16191		640	525	88			29465	192	178	1526	433	765	1125	4224	33687	135	218.26	249.55	467.81
4	51	51	7180		254	225	22			13016	82	76	651	137	328	482	1809	14825	85	153.12	174.41	327.53
5	112	32	25128		415	525	31			38186	172	178	1526	433	765	114 / 1125	4337	42524	240	159.11	177.18	336.29
6	51	23	10241		426	225	37			16152	82	76	651	187	328	46 / 482	1855	18007	102	161.29	179.48	340.77
7	115	22				315	62			5500	126	173	1089	312	1250 / 546	2468 / 1087	7113	12613	0	—	—	
8																						
9	50	60	3179	5329	700					18779	82	76	634	187	328	419	1706	20605	2465	7.62	8.36	15.98
10	16	23	822	1255	180					5387	26	24	218	62	109	154	593	5980	725	7.43	8.25	15.68
11	16	23	256							3474	26	24	218	63	109	154	594	4068	600	5.79	6.78	12.57
12	704	465	94026	6584	4432	2625	432			179079	1142	1059	2719	2500	5621	9324	28265	207444				
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ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

III. Lesson 3: Income Tax Management Techniques

A. Review

The previous lesson, Analyzing Enterprise Returns to Costs, should be reviewed. Some conclusions from the previous lesson include:

1. Knowing how costs are classified can help decide how cost can influence the decision making process for a particular time period.
2. Non cash costs or implicit costs are often overlooked because they do not involve the actual transfer of money.
3. Looking only at cash costs is sufficient in the short run but could lead to business failure over the long run.
4. Non Cash costs are often difficult to apply to specific enterprises.
5. Fixed costs are costs which do not relate to the volume of output.
6. Fixed costs are generally thought of as the DIRTI 5.
7. Fixed costs are constant in the short run but may be changed over the long run.
8. Variable costs vary with output or production.
9. Variable costs have a closer relationship with output than fixed costs.
10. Variable costs must be covered if the operation is to survive in the short run whereas fixed costs must be covered in the long run.
11. Sunk costs are costs which have already been used in the business.
12. Opportunity costs are those costs associated with choosing one alternative over another.
13. Yearly totals for overhead costs may be allocated using one or more of the following methods; 1) Percentage returns, 2) Percentage of total variable costs, 3) percentage of labor, 4) combined-common sense method.

14. Fixed and variable costs on Form 23 have been defined by the classic DIRTI 5 method.

B. Objective

To understand the changes occurring in the new tax law and how tax savings techniques may be used to maximize after tax income.

C. Motivation

1. The Tax Reform Act of 1986 made sweeping changes in the federal tax laws. The vast majority of orchardists will experience an increase in taxes resulting from changes in this law.

2. Along with this increase in taxes paid, most orchardists will incur an increased cost to the operation in the preparation of income tax returns due to the complexity of the new filing requirements. This cost will be incurred in the form of managers time if the operator is involved in the preparation or as a direct cost in hiring an accountant to complete tax forms.

3. Additionally penalties for misfiling or tardiness in filing income tax returns has increased and greater care and better forward planning will be required in preparing returns.

4. Even though many of the tax management techniques were eliminated with the Tax Reform Act those that remained must be used to their fullest extent to help orchardists maximize after tax income.

D. Key Questions

1. What are the major changes affecting orchardist resulting from the 1986 Tax Reform Act?

2. How can depreciable property be managed to maximize after tax income?

3. What other income tax management techniques are useful in maximizing after tax income?

4. What items are on a tax checklist?

E. Introduction of Information

1. What are the major changes affecting orchardists resulting from the 1986 Tax Reform Act?

   Use TM/HO-II/3/1 to help explain the changes affecting orchardist resulting from the 1986 Tax reform Act?

a. A change in the tax rate structure accompanied the Tax Reform Act of 1986. Most individuals will find their individual tax rate reduced (if their taxable income has held constant).

   1) There are now 2 tax rates for individuals 15 and 28%. TM/HO-II/3/2 shows this tax structure.

      a) As can be seen most orchardists will fit into the 28% bracket.

      b) As with the previous law, being in the 28% bracket does not mean the government is taking 28% of your taxable income. What it does mean is 28% of taxable income greater than $29,750 is taken and 15% of taxable income from $3,000 to $28,000 is taken if married, filing jointly.

      c) Even though most orchardists will probably be taxed at a lower rate they more than likely will have increased taxes based on the IRS eliminating many individual and business deductions.

   2) Corporate tax rates have been altered as well. TM/HO-II/3/3 shows the corporate rate structure.

      a) The current corporate rates are 15, 25, and 34% plus 5% additional for income between $100,000 and $335,000.

      b) The alternate rate for capital gains has been repealed.

      c) Currently 80% rather than 85% of dividends received from domestic corporations are deductible (applies only to Sub Chapter C corporations).

      d) All S corporations are required to use permitted tax year. Usually a calendar year.

      e) For most individuals forming a corporation as a tax management tool will no longer prove effective because of increased corporate tax rates. However there are advantages, mainly for estate planning purposes. This will be discussed further in lessons 11 and 12.

b. The capital gains reduction of 60% has been repealed and gains realized from the sale of capital assets are now treated as ordinary income.

1) Before 1987, only 40% of a net long term capital gain was taxable. Since the top individual rate was 50% the deduction resulted in a maximum tax rate on gain of 20% (40% of the gain times 50%). Now the maximum rate is up 8% at 28%.

   a) TM/HO-II/3/4 presents a simple example of the affect of this change on income taxes resulting from the sale of a 20 acre orchard.

   b) The affect of this change on many orchardist, particularly in relation to retirement income could prove devastating.

2) In the sale of other capital assets such as machinery and equipment this treatment of capital gains as ordinary income coupled with the shorter depreciation periods of the early 80's will result in additional income taxes to orchardists.

3) The loss of the capital gains reduction carries through to the sale of personal residences. However a few benefits in relation to personal residences still exist.

   a) If another personal residence is purchased 2 years before or 2 years after the sale of the personal residence, no income taxes are due on any capital gain realized from that sale.

   b) Also individuals, 55 or over, pay no income taxes on capital gains realized on the sale of their principal residence, even if another residence is not purchased.

4) Installment sales of farm real estate, though subject to capital gains treatment as ordinary income, may still have capital gains distributed over the life of the arrangement.

5) Capital losses are still allowed in full against capital gains and then against ordinary income up to $3,000.

   a) Long term capital losses no longer have to be reduced by 50% before applying them against ordinary income.

   b) Capital losses not fully used in one year may still be carried forward to later years.

c. State sales taxes as a deduction has been altered.

  1) Individuals are no longer allowed to deduct state sales tax. In a state such as Washington where one of the principle state revenues is realized from the sales tax this results in the loss of a substantial deduction for individuals.

  2) State sales tax is still allowed as a deduction for non-depreciable expenses purchased for the orchard business.

  3) State sales tax on depreciable items for business use are now required to be included in the initial cost basis of depreciable items and depreciated rather than expensed.

d. The Uniform Capitalization Rules applied under the 1986 Tax Reform Act require most expenses used to develop pre-productive plantings of orchards to be capitalized rather than deducted.

  1) Prior to 1987 most orchardists were given free rein on whether to capitalize or not capitalize pre-productive expenses.

  2) Costs which are capitalized are added to the value of the basis (trees in this case) in the pre-productive stage and then taken in the form of depreciation when the trees go into bearing.

    a) Direct material and labor costs are added to the assets value. Labor costs include both gross wages, benefits, and employer paid taxes.

    b) Most indirect costs involved in the development of pre-producing trees must be allocated and added to the asset value as well.

  4) TM-II/3/5 gives and example of the increase in income taxes resulting from the requirement for capitalizing pre-production expenses. This model does not take into account the additional cost of managers time and increased recordkeeping.

e. The changes in the rules for depreciating capital assets were discussed in lessons 6 and 7 of Unit I.

  1) The overall effect of this change in the majority of situations has been a decrease in after tax income because of the delay in deductions resulting from the increased life of items.

2) TM-II/3/6 gives and example of this loss of revenues resulting from the MACRS method of cost recovery.

f. The deduction for prepaid expenses has been limited under the 1986 Tax Reform Act.

1) For orchardists using the cash method of accounting, prepaid expenses cannot exceed 50% of their other farming expenses.

2) This does not apply if the orchardist's total prepaid farm supplies for the preceding 3 tax years are less than 50% of the other deductible farming expenses.

3) This rule also does not apply if there were large prepaid expenses due to a change of business operation resulting from extraordinary circumstances.

g. The deductions for business use of portions of the home has been further limited by the tax reform act but those new limitations will not effect most orchardists with offices in the home. It is important to remember those office must be in areas used exclusively and regularly as a place of business.

h. Other noteworthy changes under the Tax Reform Act of 1986 include:

1) Self employment tax; the maximum amount of earnings which are subject to self employment tax in 1987 is $43,800 and the net rate is 12.3%.

2) Federal unemployment tax (FUTA) exemptions from FUTA for wages paid some alien farm workers has been extended to 1993.

2. What are the principles basic to income tax management?

Use TM-II/3/7 to help explain the objective and basic tools of income tax management.

a. The objective of any income tax management technique is to maximize after tax income not minimize taxes.

1) Minimizing taxes is not necessarily synonymous with maximizing after tax income.

2) As an example, an orchardist could purchase enough equipment and prepaid expenses to bring taxes to a screeching halt in any given year. However he probably would not maximize after tax income. Either because of the cost of credit resulting from these purchases or the opportunity cost of not investing funds in more profitable endeavors.

b. The object then, is, always balance between minimizing taxes and making profitable, flowable decisions to accomplish this.

c. The first important tax management tool is simply to take the deductions you are due. You must expend some resources to do this.

1) If the resource used is money spend the money needed to hire a competent reputable accountant to prepare your taxes. Without a doubt you will receive a return on your investment in the form of higher after tax income that should more than cover your initial expense.

2) If the resource available is owner/managers time commit the time needed to become aware of the tax laws. Do this by attending seminars, and putting the Farmers Tax Guide to good use. Even if you have an excellent accountant learn to understand the effects of major deductions each year.

d. The second tool used for income tax management is to level income from year to year.

1. Orchardists like other agriculturalists suffer from fluctuations in income from year to year.

a) These may be minor fluctuations or periodically large losses of up to 100% differences from one bumper year to a complete washout the next.

b) These fluctuations are often uncontrollable and do not result from poor management decisions but from mother nature or market pressure.

c) As discussed in lesson 11 Unit I though an orchardist may not control over losses in a year he has the ability to manage income savings from year to year for cash flow purposes and for income tax purposes.

2. Leveling income for income tax purposes is accomplished by either postponing or accelerating income payments.

   a) This method will only work if cash method of accounting is used and is a good reason for using the cash method.

   b) Orchardists have an advantage because much of the income they receive in a year (for the previous years crops) comes in before the last quarter of the year or can be effectively estimated. This gives them greater ability to estimate in the current crop year.

   c) As a general rule of thumb in a year of substantially lower returns postpone all payment of expenses which are postponable until after December 31st. (If you are using a calendar year.)

   d) Prepay expenses or advance payment of routine expenses in years of increased income. Also where possible postpone receipt of income until the following year.

   e) Always determine whether to do this based on improvement of tax management along with maintaining adequate cash flow.

3. How can purchases of depreciable property be managed to maximize after tax income?

   Use TM/HO-II/7/8 to demonstrate how depreciable property is managed to maximize after tax income. Be willing to adjust examples with input from enrollees.

   a. A previously discussed income tax management techniques are based on two tools, one taking all allowable deductions that are appropriate and the second leveling fluctuating income.

   b. Depreciation is a sizable deduction to orchard operations. It is a deduction which if managed properly can have a great effect increasing after tax income.

      1) It is however a deduction that requires a lot of book work.

      2) In order that this tool be used all depreciable items must be included on the depreciation schedule/inventory. This should be your responsibility as manager not your accountants. Keep these inventories updated your accountant cannot deduct all depreciation unless the items are on the inventory.

3) Managers who have accountants prepare depreciation should be familiar with current laws and have a feel for what is going on on their schedules.

4) If managers are calculating depreciation themselves they should review the laws pertaining to depreciation each year. As well as including all depreciable property on the schedule don't miss taking depreciation each year. Once allowable deduction are not taken in a year it is lost for that year.

5) TM/HO-II/7/9 gives an example of depreciation deductions for 1988 for Sample Orchard. The total amount is $11,301.61 if Sample Orchard is in the 28% bracket overlooking this deduction would cost the orchard $3,164.45.

6) Depreciable items may be managed in 2 ways for leveling income. One method levels income in the short run (from one year to the next) and the other levels income over the long run (over several year period).

c. Timing purchases of depreciable property can help level income from one year to the next

1) To take full advantage of this estimates of income should be made before the last quarter August or September if possible.

    a) This is based on the 1/4 or 1/2 convention of the 1986 MACRS method.

    b) If 40% of depreciable property is purchased in the last quarter of the year the 1/4 convention is used meaning a smaller percentage of the total deduction is taken rather than 1/2.

2) The example TM/HO-II/8/10 shows an orchardist who estimates his taxable income will move from the 15% bracket to the 28% bracket for the current year.

    a) He has anticipated the need for a new tractor and mower sometime within the next year.

    b) In this situation purchasing the tractor in August will be of benefit to his tax management situation.

d. Choosing between regular MACRS and alternate MACRS can help level income over the long run.

   1) In the example on TM/HO-II/7/11 shows the effect of MACRS vs alternate MACRS method on taxable income.

   2) Unless an orchardist foresees a sharp increase in taxable income within the depreciable life of an item or is starting depreciation in a very low income year regular MACRS should be used.

   3) This is based on the time value of money. Money in hand today is worth more than receiving it 8 years in the future due to inflation and the opportunity cost of non-investment.

4. What other income tax management techniques are useful in maximizing after tax income?

   Discuss how postponement or prepayment of expenses, installment sales of orchards, and recordkeeping will help maximize after tax income.

   a. Once again taking all deductions appropriate for your operation will help insure good tax management.

   b. Good recordkeeping is a must. If you are in the 28% tax bracket each legitimate deductible expense you somehow forget to record or let slip through the cracks costs you 28 cents on the dollar.

      1) This alone could pay for a lot of recordkeeping time and tax consulting.

      2) Keeping track of costs which are capitalized on pre-producing trees must be carefully maintained and carried over from year to year until the tree is producing. Don't let poor recordkeeping make you lose what little deduction you get on these expenses when the trees are depreciated.

      3) Don't forget the "little" items they do add up.

         a) Car licenses (for trucks and cars used in the business)

         b) Account books

         c) Accounting/tax fees

         d) Loan fees

e) Cost of professional meetings

f) Orchard business travels

g) Orchard organization dues

h) Office equipment, stamps, stationery, etc.

i) Work clothing

c. A valuable tool which orchardists may use is prepayment or delaying payment of expenses.

1) After tax income should be estimated in November for this purpose. As with depreciation this technique is only used if you use the cash method of accounting.

2) If the estimate of your after tax income is placing you in a higher than usual tax bracket prepaying some expenses may place you in the lower tax bracket.

a) Remember under the 1986 tax reform act this amount has been limited to 50% of the total deductible expenses and in 1988 you can only move from the 28% to the 15% bracket.

c) Remember for this technique to be used wisely the prepayment must not strain cash flow of the operation.

3) If after tax income is below usual and has moved you into the 15% bracket try to postpone end of the year payments of expenses until after December 31st. This will hopefully let you use those expenses to their fullest on next years, hopefully higher returns.

a) If postponing payment of these expenses will yield high interest charges this may not prove profitable.

b) Also do not postpone payments to the point of developing an image of a bad credit risk.

4) Generally if your change of income does not place you, momentarily, outside your usual tax bracket take all deductions you can in the current tax year. This is a "bird in the hand" situation.

d. Many orchardists face a dilemma in selling all or parts of their orchard for retirement or other purposes.

   1) As stated previously any gain realized on the sale of orchards is now treated as ordinary income. This can prove particularly devastating to orchardist counting on every cent of that income for retirement purposes.

   2) For many who have held their orchard for numerous years this will mean a $28 taken by the government of every $100 of gain realized from this sale.

   3) For many, installment sales can be used to level out this income by spreading the capital gain tax over the life of the loan and possible placing that gain in a lower tax bracket.

1. What items are on a tax checklist?

Show TM-II/3/12 to identify some tax management items which are frequently overlooked. Some orchardist may be able to add to this list from personal experiences. Remind enrollees it is important not to overlook even what seems a small deduction. Small deductions add up quickly.

F. Group Discussion

Allow time for questions pertaining to tax management techniques and/or problems enrollees have encountered.

G. Conclusions

1. With the change in the tax laws occurring from the 1986 tax reform act orchardists must work harder to maximize after tax income.

2. Though the tax reform act reduced individual tax rates elimination of many deductions important to orchardists will result in tax increases.

3. One major change affecting orchardists is the treatment of sale of capital assets as ordinary income.

4. Due to the 1986 tax reform act orchardists are no longer allowed the choice of either capitalizing or deducting expenses on pre-producing trees, they must be capitalized.

5. Modified Accelerated Cost Recovery System (MACRS) is now used as the method for depreciating capital assets.

6. The deduction for prepaid expenses cannot exceed 50% of all other expenses.
7. The objective of any income tax management technique is to maximize after tax income not minimize taxes.
8. The two major tools used to maximize after tax income are; take all appropriate deductions and try to level income from year to year.
9. Leveling income is accomplished either by accelerating or postponing payment of expenses and receipts.
10. Choosing between alternate methods of MACRS can be an effective tax management tool.
11. Postponing receipt of payment of orchards can help orchardists maximize after tax income for retirement purposes.
12. It is important to review a tax checklist to make sure all feasible income tax management tools have been used.

H. Orchard Visit

Spend time with enrollees discussing current tax management strategies, how these have proved effective, and what additional techniques might be tried in the future.

I. Materials Needed

Instructor/Enrollee:

Farmers Tax Guide Publication 225

Agricultural Employers Tax Guide - Circular A

TM/HO-II/3/1	Major Changes From the 1986 Tax Reform Act
TM/HO-II/3/2	Current Tax Rates for Individuals
TM/HO-II/3/3	Current Tax Rates for Corporations
TM/HO-II/3/4	Effect of Capital Gains Change on Sale of Orchard
TM/HO-II/3/5	Effect of Uniform Capitalization Requirement on Pre-Producing Orchards
TM/HO-II/3/6	MACRS vs ACRS

TM/HO-II/3/7	Tools Used for Income Tax Management
TM/HO-II/3/8	Using Depreciation as an Income Tax Management Tool
TM/HO-II/3/9	The Effect of Overlooking Depreciation
TM/HO-II/3/10	Leveling Income
TM/HO-II/3/11	MACRS vs ACRS
TM/HO-II/3/12	Tax Check List

TM-II/3/1

MAJOR CHANGES ACCOMPANYING

THE 1986 TAX REFORM ACT

* CHANGE IN THE TAX RATE STRUCTURE

* CAPITAL GAINS REDUCTION OF 60% WAS REPEALED

* STATE SALES TAX AS A REDUCTION WAS ALTERED

* PRODUCTION EXPENSES OF PRE-PRODUCING FRUIT TREES MUST BE CAPITALIZED

* ACRS WAS REPLACED WITH MACRS

* DEDUCTION FOR PRE-PAID EXPENSES HAS BEEN LIMITED

* DEDUCTION FOR BUSINESS USE OF THE HOME HAS BEEN FURTHER LIMITED

INDIVIDUAL TAX RATES

TAXABLE INCOME	TAX RATE
MARRIED FILING JOINTLY OR QUALIFIED WIDOW	
0--$29,750.00	15 PERCENT
OVER $29,750.00	28 PERCENT
SINGLE	
0--$17,850.00	15 PERCENT
OVER $17,850.00	28 PERCENT
MARRIED FILING SEPARATELY	
0--$14,875.00	15 PERCENT
OVER $14,875.00	28 PERCENT
HEAD OF HOUSEHOLD	
0--$23,900.00	15 PERCENT
OVER $23,900.00	28 PERCENT

CORPORATE TAX RATES

TAXABLE INCOME	TAX RATE
NOT OVER $50,000.00	15 PERCENT
$50,000.00--$75,000.00	25 PERCENT
OVER $75,000.00	34 PERCENT

ADDITIONAL FIVE PERCENT TAX UP TO $11,750.00 IS IMPOSED ON CORPORATE TAXABLE INCOME OVER $100,000.00

CORPORATIONS WITH TAXABLE INCOME OVER $335,000.00 PAY A FLAT 34 PERCENT TAX

TM/HO-II/3/4

CAPITAL GAINS TAX

AN ORCHARDIST SELLS HIS ORCHARD IN PREPARATION FOR RETIREMENT. THE INCOME SUBJECT TO CAPITAL GAINS TAX IS $200,000.

PRIOR TO 1986

$200,000 X 40% OF CAPITAL GAINS =

$ 80,000 X 50% TAX BRACKET = $40,000

CURRENTLY

$200,000 X 100% OF CAPITAL GAINS =

$200,000 X 28% TAX BRACKET = $56,000

TM/HO-II/3/5

LOST REVENUE DUE TO THE UNIFORM CAPITALIZATION RULE

THE FOLLOWING EXAMPLE ILLUSTRATES THE LOSS IN REVENUES DUE TO THE REQUIREMENT THAT ALL PRE-PRODUCTIVE PLANTINGS OF ORCHARDS CAPITALIZE EXPENSES. THIS EXAMPLE REPRESENTS A 20 ACRE PLANTING OF SPUR TYPE RED DELICIOUS APPLES THAT ARE PLANTED ON A . THE ANNUAL CAPITALIZED EXPENSES ARE AS FOLLOWS:

PRIOR TO 1986

ANNUAL EXPENSE	AFTER TAX GAIN	8 % COMPOUND INTEREST	SAVINGS ON THAT AMOUNT
$27,026.20 x.28	$7,567.34	2.5181	$19,055.32
$ 7,485.40 x.28	$2,095.91	2.3316	$ 4,886.82
$10,043.40 x.28	$2,812.15	2.1589	$ 6,072.03
$10,327.00 x.28	$2,891.56	1.9990	$ 5,780.23
$11,731.00 x.28	$3,284.68	1.8509	$ 6,079.61
$66,613.00			$41,874.01

TM/HO-II/3/5

CAPITALIZATION AFTER 1986

$66,013.40 IS CAPITALIZED AND IN 6TH YEAR IS DEPRECIATED

YEAR	REMAINING BOOK VALUE	RATE	DEPRECIABLE AMOUNT	TAX BRACKET	AFTER TAX GAIN	8% COMPOUND INT. RATE	SAVINGS ON THAT AMOUNT
1	66,013.40	.143	9,439.92	.28	2,643.18	1.7138	4,529.88
2	56,573.48	.286	16,180.02	.28	4,530.41	1.5868	7,188.85
3	40,393.46	.286	11,552.53	.28	3,234.71	1.4693	4,752.76
4	28,840.93	.286	8,248.50	.28	2,309.58	1.3604	3,141.95
5	20,592.42	SL	6,864.14	.28	1,910.76	1.2970	2,406.98
6	13,728.28	SL	6,864.14	.28	1,910.76	1.6640	2,228.70
7	6,864.14	SL	6,864.14	.28	1,910.75	1.0800	2,063.61

TOTAL = $26,312.73

BY REQUIRING THE ORCHARDIST IN THIS EXAMPLE TO CAPITALIZE RATHER THAN TO DEDUCT HIS PRE-PRODUCTIVE EXPENSES THE GOVERNMENT HAS REDUCED THIS ORCHARDIST'S POTENTIAL INCOME AT 8 % INVESTMENT RATE OVER 12 YEARS BY $41,874.01.

TM/HO-II/3/6

MACRS VERSUS ACRS

THE EXAMPLE BELOW SHOWS A COMPARISON OF THE WAY IN WHICH A $15,000 TRACTOR WAS DEPRECIATED OUT UNDER THE STANDARD ACRS METHOD VERSUS THE NEW MACRS METHOD.

PRIOR TO 1986

ACRS

YEAR	BALANCE FOR REGULAR DEPRECIATION	RATE	DEP. AMOUNT
1	15,000	.15	2,250
2		.22	3,300
3		.21	3,150
4		.21	3,150
5		.21	3,150
6			15,000
7			

AFTER 1986

MACRS

REMAINING BOOK VALUE	RATE	DEP. AMOUNT
15,000.00	.146	2,190.00
12,810.00	.286	3,663.66
9,146.34	.286	2,615.85
6,530.49	SL	1,554.26
4,662.77	SL	1,554.26
	SL	1,554.26
	SL	1,554.26

TOOLS USED FOR INCOME TAX MANAGEMENT

*   OBJECTIVE OF INCOME TAX MANAGEMENT IS TO MAXIMIZE AFTER TAX INCOME, NOT TO MINIMIZE TAXES.

TO DO THIS

**   EXPEND THE RESOURCES TO TAKE THE DEDUCTIONS YOU ARE DUE

**   TAKE DEDUCTIONS AS EARLY AS POSSIBLE, UNLESS LEVELING INCOME WILL MOVE YOU INTO THE 15 % BRACKET IN A HIGH INCOME YEAR.

USING DEPRECIATION AS AN INCOME TAX MANAGEMENT TOOL

IN THIS EXAMPLE THE ORCHARDIST INVESTED IN A SOLID SET IRRIGATION SYSTEM ON A 20 ACRE BLOCK OF PEARS. HIS COSTS FOR THE SYSTEM COME TO $1,500.00 PER ACRE OR A TOTAL OF $30,000.00. HE IS IN, AND FORSEES REMAINING IN, THE 28% TAX BRACKET. THE ORCHARDIST USES THE FOLLOWING INFORMATION TO DECIDE WHETHER TO USE MACRS OR ALTERNATE MACRS. AT 8% INTEREST, HE IS $1,032.43 BETTER OFF USING STANDARD MACRS.

YEAR	DEPREC. REGULAR MACRS	DEPREC. ALT. MACRS	DIFF.	TAX BRACKET	MONEY FOR SAVING	8% RATE	RETURN ON SAVINGS
1	4,290.00	2,130	2,160.00	.28	604.80	1.8509	1,119.42
2	7,353.06	4,290	3,240.00	.28	907.22	1.7938	1,627.37
3	5,250.08	4,290	960.08	.28	268.82	1.5868	426.56
4	3,748.56	4,290	514.44	.28	-151.60	1.4693	-222.75
5	3,119.43	4,290	1,170.57	.28	-327.76	1.3604	-445.88
6	3,119.43	4,290	1,170.57	.28	-327.76	1.2597	-445.88
7	3,119.43	4,290	1,170.57	.28	-327.76	1.1664	-382.30
8		2,130	2,130.00	.28	-596.40	1.0800	-644.11
							1,032.43

LEVELING INCOME

IN THIS EXAMPLE AN ORCHARDIST WHO FORSEES AN INCREASE IN HIS INCOME WHICH WILL RESULT IN HIS MOVING INTO A HIGHER INCOME BRACKET (FROM 15% TO 28%). HE ESTIMATES HE WILL BE GOING BACK TO THE 15% BRACKET THE FOLLOWING YEAR. HE HAS NEED OF A NEW TRACTOR IN AUGUST AND HE PURCHASES IT IN THE HIGH TAX YEAR TAKING 179 DEDUCTION.

THE RESULT IS:

$15,000.00	TRACTOR COST
10,000.00	SECTION 179 DEDUCTION
714.85	FIRST YEAR DEPRECIATION
$10,714.85	TOTAL DEDUCTION

28 PERCENT BRACKET	15 PERCENT BRACKET
$10,714.85 x .28 =	$10,714.85 x .15 =
$ 3,000.16	$ 1,607.23

BUYING THE TRACTOR IN THE HIGH INCOME YEAR RESULTED IN A NET GAIN OF $1,392.93

TAX CHECK LIST

- DUES TO FARM ORGANIZATIONS
- COSTS OF FARM MAGAZINES AND OTHER REFERENCE AND BUSINESS MATERIAL
- FARM SHARE OF UTILITY (INCLUDING PHONE, ELECTRICITY, OFFICE PART OF HEAT) BILLS
- POSTAGE, STATIONARY, RECORDS, ETC.
- OFFICE IN HOME (DEPRECIATION ON THAT PART, ELECTRICITY, HEAT, ETC.). CHECK FOR QUALIFICATIONS.
- SAFE DEPOSIT BOX RENTALS FOR FARM USE.
- MILEAGE ON FAMILY CAR FOR FARM BUSINESS (INCLUDING ATTENDING ADULT FARMER CLASSES).
- MILEAGE ON FAMILY CAR FOR CHARITABLE AND MEDICAL PURPOSES IF ITEMIZE DEDUCTIONS.
- POLITICAL CONTRIBUTIONS
- DEDUCT THE COST OF A BABY SITTER SO THE SPOUSE CAN HELP WITH THE FARM WORK (CHECK LIMITATIONS).
- SET UP A RETIREMENT PLAN (GET HELP ON THIS ONE).

TAX CHECK LIST

CONTINUED

- INTEREST IN AN AMORTIZED LOAN
- IF AGE 63 OR 64, CONSIDER DELAYING INCOME TO AGE 65 TO GET DOUBLE EXEMPTION.
- AT RETIREMENT, SHIFT INCOME TO RENTS, INTEREST, ETC.
- ITEMIZE ALL ENTRIES ON BANK DEPOSIT SLIPS.
- MAKE AN ESTIMATE OF TAXES PRIOR TO YEAR'S END SO ADJUSTMENTS CAN BE PLANNED.

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

IV. Lesson 4: Closing the Record Book for Analysis

A. Review

1. With the change in the tax laws occurring from the 1986 tax reform act orchardists must work harder to maximize after tax income.
2. Though the tax reform act reduced individual tax rates elimination of many deductions important to orchardists will result in tax increases.
3. One major change affecting orchardists is the treatment of sale of capital assets as ordinary income.
4. Due to the 1986 tax reform act orchardists are no longer allowed the choice of either capitalizing or deducting expenses on pre-producing trees, they must be capitalized.
5. Modified Accelerated Cost Recovery System (MACRS) is now used as the method for depreciating capital assets.
6. The deduction for prepaid expenses cannot exceed 50% of all other expenses.
7. The objective of any income tax management technique is to maximize after tax income not minimize taxes.
8. The two major tools used to maximize after tax income are; take all appropriate deductions and try to level income from year to year.
9. Leveling income is accomplished either by accelerating or postponing payment of expenses and receipts.
10. Choosing between alternate methods of MACRS can be an effective tax management tool.

B. Objective

To properly summarize and complete the record book at the end of the year for the year end computer analysis.

C. Motivation

1. Explain to enrollees that accurately summarizing their record book and taking time to cross check entries will ensure a more thorough and accurate computer analysis of their operation.
2. This analysis will be the basis of money management decisions they will encounter in the years to come.
3. This analysis will be available to them for a minimal charge, in years after completing the course.
4. The accuracy of their summaries will also be important to insuring averages (made up of all enrollees) will be more accurate as well.

D. Key Questions

1. How are receipts and expenses totaled and cross checked for summary and analysis?
2. How are enterprise receipts and expenditures totaled and cross checked for analysis?
3. How are payroll forms totaled and cross checked for analysis?
4. How are inventories updated for analysis?
5. How are the financial statement, and profit and loss statement completed for analysis?
6. How is the cash flow summary completed for analysis?

E. Introduction of Information

The main purpose of this class meeting is to have enrollees start preparing their records for the year end summary. This summary is important for income tax preparation, for obtaining credit and for analysis of the operation. Most concepts presented in this information are a review of concepts presented in Unit I. Enrollees should be working along using their own records as the instructor points out procedures on various forms .

1. How are receipts and expenses totaled and cross checked for summary and analysis?

   Use TM/HO-1, 2 and 24 to demonstrate how receipts and expenses are cross checked for summary and analysis.

a. If records have been maintained monthly, totals for receipts and expenditures have been cross checked for accuracy. These monthly totals should have been entered on the cash flow summary as well.

b. If this is the case calculating and cross checking is very simple.

    1) Add monthly totals for columns 3 and 5 through 31 of form 1 and enter in red several lines below the last entry for the year.

        a) The total of columns 5 through 31 should equal the Total Receipts column.

        b) If a discrepancy arises try recalculating. Theoretically if monthly totals were checked previously for accuracy this should solve the problem.

        c) If an error still exists after recalculating suggest enrollees cross check at 3/4 of the year then 1/2 year then 1/4 year to narrow the area where the error exists. From there they must check monthly totals. (Have enrollees with these kinds of problems check this on out of class time.)

    2) Add monthly totals for columns 3 and columns 5 through 35 of form 2 and enter them in red several lines below the last entry for the year.

        a) Once again the total for columns 6 through 35 should equal the total cost column 3.

        b) Follow the procedures in steps 1b and 1c if these do not agree.

2. How are enterprise receipts and expenditures totaled and cross checked for analysis? Use TM/HO 3 to demonstrate how the enterprise allocation is cross checked for summary and analysis.

a. Once again if good record keeping practices have been followed monthly totals will have been cross checked for accuracy and entered.

b. Using these monthly totals will facilitate an easy yearly total.

    1) Add the monthly totals for columns 3 through 39 of form three and enter several lines below the last entry.

2) Repeat this procedure for each enterprise.

3) The sum of these yearly totals should equal the total cost column of form 2. If this is not the case monthly totals will have to be re-checked for accuracy. (This could be a very time consuming task and will have to be performed by enrollees outside of class time.)

4) Next enter these yearly totals for all enterprises on form 23 as described in lesson 2 of unit II.

5) Distribute the overhead enterprise following the guidelines in lesson 2 of Unit II on form 22 then enter these amounts on form 23.

3. How are payroll forms totaled and cross checked for analysis?

Use TM/HO-4 and 5 to demonstrate how payroll forms can be cross checked for analysis.

a. Designate 2 digit employee numbers for any employee on whom an analysis of work is desired.

1) Individual analysis of up to 5 employees is allowed.

2) For all other employees lump into one number for full/part-time and another number for seasonal laborers.

b. Accurate monthly totals should have been maintained throughout the year.

1) Add together those monthly totals for all columns on the full/part-time payroll form for an employee and enter in red several lines below last entry for that employee.

a) The sum of the total gross pay of each of the job categories should equal the total gross pay of column 30.

b) The yearly net pay should equal the yearly total gross pay minus the sum of columns 31-34.

c) If errors are discovered, recalculate these yearly totals. If errors still exist re-check monthly totals.

2) Add together the monthly totals for all columns on the seasonal payroll form for all employees and enter in red several lines below the last entry for all seasonal employees.

a) The sum of the total gross pay of each of these three job categories should equal the total gross pay of column 14.

b) The yearly net pay should equal the total gross pay minus columns 16, 17 and 18 (unless housing and miscellaneous are subtracted from the gross pay).

c) If errors are discovered recalculate these yearly totals. If errors still exist after these re-calculations, cross check page totals.

c. The yearly totals for units of work and gross pay on form 4 plus form 5 should equal the yearly totals (for all enterprises) on form 23.

4. How are inventories updated for analysis?

Use TM/HO 10-14 to demonstrate how inventories are updated.

a. Form 10, Inventory of Land, should be updated for the current year. Make sure to:

1) Indicate and increase or decrease in the Fair Market Value of the land.

2) Indicate any increase or decrease in the Fair Market Value of Component of the land. These figures should coincide with the Fair Market value of these components on the depreciation schedule.

3) Indicate any sale or purchase of land parcels.

4) Total these values for the current year and write that total in red in the appropriate year's columns.

b. Form 11, Capitalization Record/Inventory for pre-producing trees should be updated for the current year.

1) Make sure all information on this year's plantings of new blocks is complete.

2) Make sure all blocks going into production are lined out and included on the tree depreciation schedule.

3) If production expenses were capitalized for income tax purposes get the total capitalized expenses from the enterprise allocation sheet as described in lesson 5 Unit I.

    4) Evaluate this year's fair market value for all blocks on the inventory of pre-producing trees.

    5) Total the cost basis column, and fair market value column for all blocks and write that total in red on the bottom of the page or pages.

  c. Form 12, Depreciation Schedule/Inventory for producing trees should be updated for the current year.

    1) Make sure all producing plantings are accounted for on the inventory.

    2) Write in this year's fair market value for all blocks on the inventory.

    3) For any new producing plantings or purchases enter the life and method of depreciation to be used for this planting.

    4) Total the fair market value of all plantings and write that total in red on the bottom of the page under the current year.

  d. Follow a similar procedure for items on Form 13 and 14 Depreciation Schedule/Inventory, Machinery and Equipment and Buildings.

  e. Update the inventory of stored crops making sure the most recent packout has been included on this information.

    1) Make sure the conversion to pounds data is complete.

    2) Include any grower percentages currently available.

  f. Update accounts receivable with any current payments which may not have been entered.

5. How are the financial statements and profit or loss statements completed for analysis.

   Use TM/HO 25 and 26 to demonstrate where to obtain information to complete the profit and loss statement and financial statement.

  a. Information for the profit and loss statement can be found from the following locations in the record book.

    1) Yearly totals from the receipts and expenditures forms 1 and 2 are used to complete information on the cash income and expenses section.

2) Crop Inventory changes are taken from the stored crop inventory form 15 for the current year and previous year.

3) Accounts receivable net change is taken from form 16 for this and the previous year.

4) Gain or loss on capital sales will be automatically generated if an analysis was run in the previous year. Or by subtracting the cost basis minus the selling price.

5) Accounts payable is taken from form 20 for this and the previous year.

6) Depreciation will be generated in the analysis and automatically transferred to the profit and loss statement. Enrollees should be aware this will reflect the depreciation for income tax purposes and adjustments should be made to more accurately reflect net farm income.

7) The net farm income and measurements of profitability will automatically be calculated.

6. How is the cash flow summary completed for analysis?

a. If monthly totals from receipts and expenditures were transferred to the cash flow summary completing this section will be very painless.

b. Simply total horizontally the 12 month entries for a given receipt and cost category.

c. Each of these totals should equal the annual total for that category from the receipt and expenditure pace.

d. Next make sure all monthly receipts and monthly expense totals are complete.

e. Add these monthly totals and see that they are equal to the totals for the cost category.

F. Group Discussion

Sufficient time should be allowed for individual questions from enrollees pertaining to their records. Allow time for enrollees to complete the major portion of these summaries in class.

G. Conclusions

1. If monthly totals on Forms 1 - 5 are maintained preparing the records for year-end analysis should be swift and painless.
2. All year-end totals should be cross checked for accuracy.
3. Inventories and depreciation schedules should be updated and totaled for analysis and information needed on the summary forms.
4. Information on the financial statement and profit and loss statement must be completed for analysis.

H. Orchard Visit

On the visit following this lesson help enrollees complete their summary of records. Pay particular attention to enrollees having trouble with bugs appearing in their cross check of totals.

I. Materials Needed

Instructor

TM's 1 through 26

Enrollees

Orchard Business Management Record Books

FORM 1 MONTH(S)

SOURCES OF RECEIPTS

PAGE YEAR

						COOP PATRONAGE DIVIDENDS/REFUNDS						OTHER RECEIPTS				
	DATE RECEIVED	DATE OF DEPOSIT	TOTAL RECEIPT	DESCRIPTION	CUSTOM WORK	$	EQUITY	CAPITAL SALES	INTEREST	BORROWED FUNDS	ACCRUAL ADJUSTMENT					
1																1
2																2
3																3
4																4
5																5
6																6
7																7
8																8
9																9
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FORM 1 MONTH(S)

SOURCES OF RECEIPTS

PAGE YEAR

CROP RECEIPTS

	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	ENT. #(S):	
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FORM 2 MONTH(S)

DISTRIBUTION OF EXPENDITURES

PAGE YEAR

						HIRED LABOR												
							DEPOSITED											
	DATE	CHK #	TOTAL COST	ENT. #	DESCRIPTION	NET WAGES	FICA/ FED. INC. TAX W/HOLD	STATE UNEMPLOY. /FUTA	STATE WORKERS COMP.	MISC. BENEFITS/ HOUSING	PEST CONTROL	FERTILIZER /LIME	IRRIGATION ASSESSMENT	UTILITIES	FUEL/ OIL	TRUCK/ AUTO	REPLACE TREES	
1																		1
2																		2
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7																		7
8																		8
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PAGE YEAR

DISTRIBUTION OF EXPENDITURES

FORM 2 MONTH(S)

						WAREHOUSE CHARGES			OTHER EXPENSES				NEW INVESTMENTS			PRINCIPAL PAID ON BORROWED FUNDS			
	MACHINERY MAINT.	IRRIGATION /BUILDING MAINT.	TAXES	INSURANCE	INTEREST	PACKING/ HANDLING	CROP STORAGE						TREES/ CAPTL'Z PRODUCTION EXPENSES	DEPREC. ITEMS	NON-DEPREC. ITEMS	PRODUCTION LOANS	INTERMED. LOANS	LONG TERM LOANS	
1																			1
2																			2
3																			3
4																			4
5																			5
6																			6
7																			7
8																			8
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FORM 3 ENT #:

ENTERPRISE EXPENDITURES

MONTH(S) PAGE YEAR

	FROM		HIRED LABOR																		PEST CONTROL
			PRUNING UNITS:		IRRGATION UNITS:		THINNING UNITS:		CHEMICAL APPL. UNITS:		HARVEST UNITS:		UNITS:		UNITS:		UNITS:		EMPLOYER PAID		
	FORM	DATE	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	# UNITS	GROSS PAY	EMPLOYMENT TAXES	MISC. BENEFITS/ HOUSING	
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FORM 3 ENT. #(S)

ENTERPRISE EXPENDITURES

MONTH(S) PAGE YEAR

	FERTILIZER /LIME	IRRIGATION ASSESSMENT	UTILITIES	FUEL/ OIL	TRUCK/ AUTO	REPLACE TREES	MACHINERY MAINT.	IRRIGATION /BUILDING MAINT.	TAXES	INSURANCE	INTEREST	WAREHOUSE CHARGES			OTHER EXPENSES				
												PACKING/ HANDLING	CROP STORAGE						
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FORM 4 MONTH(S)

PAYROLL - FULL/PART-TIME LABOR

PAGE YEAR

EMPLOYEE NAME: ______ ADDRESS: ______ S.S. # ______

BIRTHDATE: ______ BIRTHPLACE: ______ WORK AUTHORIZATION CARD: ______ DATE CHECKED: ______ EXEMPTIONS: ______

				PRUNING/BRUSH REMOVAL			IRRIGATION			THINNING			CHEMICAL APPLICATION			HARVEST						
	DATE	ENT. #	JOB DESCRIPTION	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	
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FORM 4 MONTH(S)

PAYROLL - FULL/PART-TIME LABOR

PAGE YEAR

ADDITIONAL INFORMATION:

										EMPLOYEE PAID					EMPLOYER PAID					
	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	HRS. WRKD	RATE -/HOUR	TOTAL GROSS PAY	FED. INC. TAX W/HOLDING	FICA	STATE WORKERS COMP.	MISC. BENEFITS/ HOUSING	NET PAY	FICA	FUTA	STATE UNEMPLOY. INSURANCE	STATE WORKERS COMP.	MISC. BENEFITS/ HOUSING	
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FORM 5 MONTH(S) /

PAYROLL - SEASONAL LABOR

PAGE YEAR

EMPLOYEE NAME: ADDRESS: S. S. #

BIRTHDATE: BIRTHPLACE: WORK AUTHORIZATION CARD: DATE CHECKED: EXEMPTIONS:

			PRUNING/BRUSH REMOVAL			THINNING			HARVEST							EMPLOYEE PAID				EMPLOYER PAID				
	DATE	ENT. #	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	HRS. WRKD	RATE /HOUR	TOTAL GROSS PAY	HOUSING/ MISC.	FED. INC. TAX W/HOLDING	FICA	STATE WORKERS COMP.	NET PAY	FICA	FUTA	STATE UNEMPLOY. INSURANCE	STATE WORKERS COMP.	
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EMPLOYEE NAME: ADDRESS: S. S. #

BIRTHDATE: BIRTHPLACE: WORK AUTHORIZATION CARD: DATE CHECKED: EXEMPTIONS:

			PRUNING/BRUSH REMOVAL			THINNING			HARVEST							EMPLOYEE PAID				EMPLOYER PAID				
	DATE	ENT. #	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	RATE/ UNIT	# UNITS	GROSS PAY	HRS. WRKD	RATE /HOUR	TOTAL GROSS PAY	HOUSING/ MISC.	FED. INC. TAX W/HOLDING	FICA	STATE WORKERS COMP.	NET PAY	FICA	FUTA	STATE UNEMPLOY. INSURANCE	STATE WORKERS COMP.	
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FORM 6 MONTH(S)

FEDERAL TAX DEPOSIT SCHEDULE

PAGE YEAR

		UNDEPOSITED					UNDEPOSITED					UNDEPOSITED					UNDEPOSITED				
			FICA					FICA					FICA					FICA			
	DATE	FEDERAL INCOME TAX W/HOLDING	EMPLOYEE PAID	EMPLOYER PAID	TAX BALANCE	DATE	FEDERAL INCOME TAX W/HOLDING	EMPLOYEE PAID	EMPLOYER PAID	TAX BALANCE	DATE	FEDERAL INCOME TAX W/HOLDING	EMPLOYEE PAID	EMPLOYER PAID	TAX BALANCE	DATE	FEDERAL INCOME TAX W/HOLDING	EMPLOYEE PAID	EMPLOYER PAID	TAX BALANCE	
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FORM 7

UNEMPLOYMENT INSURANCE/WORKERS COMPENSATION - QUARTERLY TOTALS

PAGE YEAR

		QUARTER:					QUARTER:					QUARTER:					QUARTER:					
					STATE					STATE					STATE					STATE		
	EMPLOYEE NAME	HRS. WRKD	GROSS PAY	FUTA	UNEMPLOY INSUR.	WORKERS COMP.	HRS. WRKD	GROSS PAY	FUTA	UNEMPLOY INSUR.	WORKERS COMP.	HRS. WRKD	GROSS PAY	FUTA	UNEMPLOY INSUR.	WORKERS COMP.	HRS. WRKD	GROSS PAY	FUTA	UNEMPLOY INSUR.	WORKERS COMP.	
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FORM 9 YEAR(S)

ENTERPRISE DESIGNATION

PAGE

	DATE SET	DESCRIPTION	# ACRES	FIELD #	BLOCK #	COMMODITY		VARIETY		ROOTSTOCK		TRAINING SYSTEM		ENT. #	SPACING	# TREES /ACRE	IRRIGATION SYSTEM	COVER
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FORM 10

YEARS

LAND INVENTORY

PAGE

			YEAR:				YEAR:				YEAR:				
			FAIR MARKET VALUE				FAIR MARKET VALUE				FAIR MARKET VALUE				
	ENT. #	DESCRIPTION	TREES	IRRIGATION /BUILDINGS	LAND	TOTAL	TREES	IRRIGATION /BUILDINGS	LAND	TOTAL	TREES	IRRIGATION /BUILDINGS	LAND	TOTAL	
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FORM 11 YEAR(S)

CAPITALIZATION RECORD/INVENTORY PRE-PRODUCING TREES

PAGE

										YEAR:			YEAR:			
	DATE SET	ENT. #	DESCRIPTION	# ACRES	# TREES/ ACRE	COST/ TREE	TOTAL COST TREES	CAPTL'Z EXPENSES	TOTAL BASIS	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	
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FORM 11 YEAR(S)

CAPITALIZATION RECORD/INVENTORY PRE-PRODUCING TREES

PAGE

	YEAR:			YEAR:			YEAR:			YEAR:			YEAR:			YEAR:			
	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	CAPTL'Z EXPENSES	TOTAL BASIS	FAIR MARKET VALUE	
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FORM 12 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - PRODUCING TREES

PAGE

										ITEMS PURCHASED PRIOR TO 1985			ITEMS CARRIED FORWARD FROM PREVIOUS DEPRECIATION SCHEDULES				ITEMS PURCHASED AFTER 1986		
	DATE SET	DATE PROD.	ENT. #	DESCRIPTION	ACRES	TREES/ ACRE	TOTAL COST TREES	TOTAL CAPTL'Z COSTS	TOTAL BASIS	INV. CREDIT	EXP. ELEC.	BALANCE FOR REG. DEPREC.	PRIOR DEPREC.	REMAINING BOOK VALUE	LIFE	METHOD	1/2 OR 1/4 YEAR	PERCENTAGE CALCULATION	
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FORM 12 YEAR(S) PAGE

DEPRECIATION SCHEDULE/INVENTORY - PRODUCING TREES

	YEAR:				YEAR:				YEAR:				YEAR:				YEAR:				
	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	
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FORM 13 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - MACH./EQUIP./SINGLE PURPOSE BLDGS.

PAGE

				ITEMS PURCHASED PRIOR TO 1985					ITEMS PURCHASED PRIOR TO 1981		ITEMS CARRIED FORWARD FROM PREVIOUS DEPRECIATION SCHEDULES				ITEMS PURCHASED AFTER 1986		
	DATE	ENT. #	DESCRIPTION	INV. CREDIT	REMAINING BOOK VALUE TRADE-IN	CASH DIFFERENCE PAID	TOTAL BASIS	EXPENSE ELECTION	SALVAGE VALUE	BALANCE FOR REG. DEPREC.	PRIOR DEPREC.	REMAINING BOOK VALUE	LIFE	METHOD	1/2 OR 1/4 YEAR	PERCENTAGE CALCULATION	
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FORM 13 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - MACH./EQUIP./SINGLE PURPOSE BLDGS.

	YEAR:				YEAR:				YEAR:				YEAR:			
	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE
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FORM 13 YEAR(S) **DEPRECIATION SCHEDULE/INVENTORY - MACH./EQUIP./SINGLE PURPOSE BLDGS.** PAGE

YEAR:				YEAR:				YEAR:				YEAR:				
DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	
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FORM 13 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - MACH./EQUIP./SINGLE PURPOSE BLDGS.

PAGE

	YEAR:				YEAR:				YEAR:				YEAR:				YEAR:				
	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	
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FORM 14 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - MULTIPURPOSE BUILDINGS

PAGE

				BUILDING COSTS			ITEMS CARRIED FORWARD FROM PREVIOUS DEPRECIATION SCHEDULES				ITEMS PURCHASED AFTER 1986		YEAR:				
													DEPRECIATION				
	DATE	ENT. #	DESCRIPTION	MATERIALS	HIRED LABOR	TOTAL BASIS	PRIOR DEPREC.	REMAINING BOOK VALUE	LIFE	METHOD	1/2 OR 1/4 YEAR	PERCENTAGE CALCULATION	%	$	REMAINING BOOK VALUE	FAIR MARKET VALUE	
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FORM 14 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - MULTIPURPOSE BUILDINGS

	YEAR:				YEAR:				YEAR:				YEAR:			
	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE
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FORM 14 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - MULTIPURPOSE BUILDINGS

PAGE

YEAR:				YEAR:				YEAR:				YEAR:				
DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	
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FORM 14 YEAR(S)

DEPRECIATION SCHEDULE/INVENTORY - MULTIPURPOSE BUILDINGS

PAGE

	YEAR:				YEAR:				YEAR:				YEAR:				YEAR:				
	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	DEPRECIATION		REMAINING BOOK VALUE	FAIR MARKET VALUE	
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FORM 16 MONTH(S)

ACCOUNTS RECEIVABLE

PAGE YEAR

	TRANSACTION:			TRANSACTION:			TRANSACTION:			TRANSACTION:			TRANSACTION:			TRANSACTION:			
	DATE	BALANCE	PAYMENT	DATE	BALANCE	PAYMENT	DATE	BALANCE	PAYMENT	DATE	BALANCE	PAYMENT	DATE	BALANCE	PAYMENT	DATE	BALANCE	PAYMENT	
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FORM 17 YEAR

PRODUCTION LOAN RECORD

PAGE

LENDER: INTEREST RATE: DATE ORIGINATED:

TERMS: APR: MATURITY DATE:

	DATE	TRANSACTION DESCRIPTION	FUNDS BORROWED				FUNDS REPAYED			BALANCE			
			ITEM AMOUNT	GROSS $ BORROWED	COOP STOCK	NET $ BORROWED	TOTAL PAYMENT	INTEREST PAID	PRINCIPAL PAID	ACCRUED INTEREST	REMAINING PRINCIPAL AVAILABLE	ACCUM. PRINCIPAL BORROWED	
1													1
2													2
3													3
4													4
5													5
6													6
7													7
8													8
9													9
10													10
11													11
12													12
13													13
14													14
15													15
16													16
17													17
18													18
19													19
20													20
21													21
22													22
23													23
24													24
25													25
		2	3	4	5	6		8	9	10	11	12	

FORM 18 YEAR(S)

REPAYMENT SCHEDULE/RECORD - INTERMEDIATE/LONG TERM LOANS

PAGE

LENDER: GROSS BORROWED: STOCK:

NET BORROWED: LOAN PURPOSE: INTEREST RATE:

DATE ORIGINATED: TERMS: APR:

	REPAYMENT SCHEDULE				REPAYMENT RECORD				
	DATE DUE	TOTAL PAYMENT	INTEREST DUE	PRINCIPAL DUE	DATE PAID	TOTAL PAYMENT	INTEREST PAID	PRINCIPAL PAID	UNPAID BALANCE
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
	1		3	4	5	6	7		9

LENDER: GROSS BORROWED: STOCK:

NET BORROWED: LOAN PURPOSE: INTEREST RATE:

DATE ORIGINATED: TERMS: APR:

	REPAYMENT SCHEDULE				REPAYMENT RECORD				
	DATE DUE	TOTAL PAYMENT	INTEREST DUE	PRINCIPAL DUE	DATE PAID	TOTAL PAYMENT	INTEREST PAID	PRINCIPAL PAID	UNPAID BALANCE
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									
	1	2	3	4		6	7	8	9

FORM 20 MONTH(S)

ACCOUNTS PAYABLE

PAGE YEAR

	VENDOR:					VENDOR:					VENDOR:					VENDOR:					
	DATE	BALANCE	PURCHASES	PAYMENT	INTEREST	DATE	BALANCE	PURCHASES	PAYMENT	INTEREST	DATE	BALANCE	PURCHASES	PAYMENT	INTEREST	DATE	BALANCE	PURCHASES	PAYMENT	INTEREST	
1																					1
2																					2
3																					3
4																					4
5																					5
6																					6
7																					7
8																					8
9																					9
10																					10
11																					11
12																					12
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18																					18
19																					19
20																					20
21																					21
22																					22
23																					23
24																					24
25																					25
	1	2	3	4	5	6	7		9	10	11	12	13	14	15	16	17	18	19	20	

FORM 21 MONTH(S)

FAMILY LIVING RECEIPTS AND EXPENDITURES

PAGE YEAR

	RECEIPTS								EXPENDITURES						
	DATE	TOTAL RECEIPT	DESCRIPTION						DATE	TOTAL COST	CHK. #	DESCRIPTION	FOOD	CLOTHING	TELEPHONE
1															
2															
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15															
16															
17															
18															
19															
20															
21															
22															
23															
24															
25															
			3	4	5		7	8	9	10	11	2	13	1	15

FORM 21 MONTH(S)

FAMILY LIVING RECEIPTS AND EXPENDITURES

PAGE YEAR

	EXPENDITURES																		
										INTEREST		PRINCIPAL PAID							
	UTILITIES	RENT	HOME IMPRVMNT.	ENTERTAIN. /REC.	EDUCATION	MEDICAL EXPENSES	INSURANCE	CHARITABLE CONTRB.	TAXES	TAXABLE	NON-TAX.	INTERMED. LOANS	LONG-TERM LOANS						
1																			1
2																			2
3																			3
4																			4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10
11																			11
12																			12
13																			13
14																			14
15																			15
16																			16
17																			17
18																			18
19																			19
20																			20
21																			21
22																			22
23																			23
24																			24
25																			25
		17	18	19	20	21		23	24	25	26	27		29	30	31	32	33	

FORM 22 YEAR

DISTRIBUTION OF OVERHEAD COSTS

PAGE

	COST CATAGORY	FROM	TO	ANNUAL TOTAL	ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		
					%	$	%	$	%	$	%	$	%	$	%	$	%	$	
1																			1
2																			2
3																			3
4																			4
5																			5
6																			6
7																			7
8																			8
9																			9
10																			10
11																			11
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16																			16
17																			17
18																			18
19																			19
20																			20
21																			21
22																			22
23																			23
24																			24
25																			25
	1	2	3	4	5		7	8	9	10	11	12	13	14	15	16	17	18	

FORM 22 YEAR

DISTRIBUTION OF OVERHEAD COSTS

PAGE

	ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		ENT. #(S):		
	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	%	$	1
1																			2
2																			3
3																			4
4																			5
5																			6
6																			7
7																			8
8																			9
9																			10
10																			11
11																			12
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14																			15
15																			16
16																			17
17																			18
18																			19
19																			20
20																			21
21																			22
22																			23
23																			24
24																			25
25																			
	1	20	21	22	23	24	25	26	27	28	29	30	31	32	33	4	35	36	

FORM 27 MONTH(S)

MACHINERY REPAIR

PAGE YEAR

	MACHINE/EQUIPMENT:					MACHINE/EQUIPMENT:					MACHINE/EQUIPMENT:					
	DATE	HRS.	REPAIR/MAINTENANCE	AMOUNT	BALANCE	DATE	HRS.	REPAIR/MAINTENANCE	AMOUNT	BALANCE	DATE	HRS.	REPAIR/MAINTENANCE	AMOUNT	BALANCE	
1																1
2																2
3																3
4																4
5																5
6																6
7																7
8																8
9																9
10																10
11																11
12																12
13																13
14																14
15																15
16																16
17																17
18																18
19																19
20																20
21																21
22																22
23																23
24																24
25																25
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	

FORM 28 LOCATION:

IRRIGATION RECORD

PAGE YEAR

	DATE	SOIL MOISTURE CONDITIONS	DEPTH	TREE/CROP CONDITIONS	WEATHER CONDITIONS	HOURS/ SET	
1							1
2							2
3							3
4							4
5							5
6							6
7							7
8							8
9							9
10							10
11							11
12							12
13							13
14							14
15							15
16							16
17							17
18							18
19							19
20							20
21							21
22							22
23							23
24							24
25							25
	1	2	3	4	5	6	

FORM 28 LOCATION:

IRRIGATION SCHEDULE

PAGE YEAR

	PREVIOUS EVAPORATIVE PAN READING	CURRENT EVAPORATIVE PAN READING	DIFFERENCE (A-B)	CROP USE FACTOR FOR MONTH Kc	CROP WATER USAGE (C x D)	USEABLE WATER STORAGE CAPACITY (L)	REMAINING USEABLE WATER (E - F)	ESTIMATED TIME TO NEXT IRRIGATION
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
		B	C	D	E	F	G	H

I) SOIL TYPE: ____________________

J) WATER STORAGE DEPTH: ____________________

K) USEABLE WATER/FOOT: ____________________

L) USEABLE WATER STORAGE CAPACITY: J x K = ____________________

M) GALLONS/MINUTE FROM SPRINKLER: ____________________

N) AREA COVERED: LATERAL SPACING x HEAD SPACING = ____________________

O) GROSS APPLICATION RATE FOR SPRINKLERS: $\frac{M \times 96.3}{N}$ = ____________________

P) NET APPLICATION RATE FOR SPRINKLERS: O x .75 (EFFICIENCY FACTOR) = ____________________

Q) # OF HOURS/SET TO BRING SOIL TO FIELD CAPACITY: L / P = ____________________

FORM 29 MONTH(S)

CHEMICAL APPLICATION

PAGE YEAR

	DATE	LOCATION/ ENT. #(S)	WEATHER CONDITIONS	APPLICATION METHOD	GROWTH STAGE	# ACRES	PESTICIDES				
							MATERIAL	RATE/ACRE	TOTAL APPLIED	COMMENTS	
1											1
2											2
3											3
4											4
5											5
6											6
7											7
8											8
9											9
10											10
11											11
12											12
13											13
14											14
15											15
16											16
	1	2	3	4	5	6	7	8	9	10	

164

165

FORM 29 MONTH(S)

CHEMICAL APPLICATION

PAGE YEAR

	GROWTH REGULATORS				FERTILIZER					
	MATERIAL	RATE/ ACRE	TOTAL APPLIED	COMMENTS	MATERIAL	RATE/ ACRE	RATE/ TREE	TOTAL APPLIED	COMMENTS	
1										1
2										2
3										3
4										4
5										5
6										6
7										7
8										8
9										9
10										10
11										11
12										12
13										13
14										14
15										15
16										16
	11	12	13	14	15	16	17	18	19	

FORM 30

DIARY OF CULTURAL PRACTICES

PAGE YEAR

		PRUNING			BLOOM								
		DATE			DATE								
	LOCATION/ ENT: #(S)	FROM	TO	COMMENTS	FROM	TO	FULL BLOOM	WEATHER CONDITIONS	HIVES/ACRE	POLLIN SOURCE	SET	COMMENTS	
1													1
2													2
3													3
4													4
5													5
6													6
7													7
8													8
	1	2	3	4	5	6	7	8	9	10	11	12	

FORM 30

DIARY OF CULTURAL PRACTICES

PAGE YEAR

	THINNING			HARVEST												
	DATE		COMMENTS	DATE		INDICES OF MATURITY									COMMENTS	
	FROM	TO		FROM	TO	DFFB	AVG. SIZE	COLOR	SOLUBLE SOLIDS	PRESSURE	STARCH IODINE	TOTAL # BINS	# ACRES	# BINS /ACRE		
1																1
2																2
3																3
4																4
5																5
6																6
7																7
8																8
	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

V. Lesson 5: Using the Concepts of Time Value of Money

A. Review

Spend the review time discussing any common problems enrollees had with summarizing records for analysis. Explain the length of time required for that analysis and that results will be sent as soon as the analysis is complete.

B. Objective

To use the concept of time value of money in planning investments.

C. Motivation

Tell the class you will extend them the following offer.

Explain if any class member will give you $1000. per year for ten years you will give them $1000 per year as long as they live if they will accept it after the 10th year. When they decide they want to stop it you will return their original $10,000. As an example, at this rate of $1000. per year for ten years they will have put in $10,000. If they get the $1000 per year returned for 30 years they will receive $30,000 plus the original $10,000 or a total of $40,000.

Instructors needn't worry as long as that money is put in a CD or time certificate earning 8 percent or over. You take the 1,000 each year and place it in an interest bearing account of 8 percent compounded annually. At the end of 10 years you will have $14,487. You will leave it in the account to earn 8 percent annual interest and receive $1159. annually ($14,487 x .08 = $1159) of this you send $1000. each year to the investor and keep $159. for your postage stamp and idea. When they decide to quit, you return their $10,000. and keep the extra $4,487. for your trouble.

D. Key Questions

1. How is future value determined?
2. How is present value determined?
3. How is the index of profitability used?
4. How are loan repayment (annuity) tables used?

E. Introduction of Information

Point out that money has a time value. Or, put another way, a dollar in the hand today is worth more than a dollar to be used in the future. The basic reason is that the dollar received today could be put to put to work to earn more money.

1. How is future value determined?

   a. Pass out the compounding table TM/HO-II/5/1 along with the examples handout TM/HO-II/5/2 to calculate the Future value at compound interest is designed to give the value that a dollar amount will yield at a given interest rate over a set period of time. This has a number of applications in managing money in the orchard operation.

      1) Compounding tables may be used to determine the affect of inflation on future purchases. Use example 1 and 2 on TM/HO I-5-2 to demonstrate this usage.

         a) First have class members estimate the inflation rate over the next 5 years. Enter on a.

         b) Then enter the current price of a new 60hp low profile tractor on b.

         c) Let's assume an orchardist is planning on replacing his current tractor with a new model in 5 years and wants to estimate the future price.

         d) Using the Future Value at Compound Interest table find the expected interest rate on the horizontal and the number of years 5 on the vertical.

         e) Enter the number from the intersection of these two on c and multiply times b to determine the future value.

         f) This technique can be used in long term budgeting to more accurately reflect production costs down the road.

      2) Future value may also be used to determine the returns from alternative investments such as the opportunity cost of orchard investments.

   b. Distribute TM/HO-II/5/3 along with TM/HO-II/5/4. Explain this is a compound annuity table. This was the table used in the motivation example and is used to determine the future value of a regular interval investment at a set period of time.

1) This table can be used to compare the cost of different life insurance policies.

2) Have enrollees complete TM/HO-II/5/4.

2. How is present value determined?

Explain that this concept is the opposite of future value. Future value is based on the knowledge of the value of an item today and the future value is projected. With present value concept, we know the returns expected in the future and use this concept to determine the value at present.

a. Distribute copies of TM/HO-II/5/5 and TM/HO-II/5/6. This is the present value table and tells the value at present of $1 received at a given period in the future based on a particular interest rate.

   1) As a simple example a $1 received five years in the future will have a value today of $.68 if the average annual interest rate is 8 percent.

   2) Example 2 is designed to help evaluate the "buying power of retirement income based on its net present value.

      a) Enter the monthly value of retirement income on a).

      b) Enter the expected annual inflation rate over the next 10 years b).

      c) Enter the net present value constant from the intersection of b. and 10 years.

      d) Multiply c times the retirement income a. This is the present value of that future income or buying power of those dollars 10 years down the road.

   3) Distribute copies of TM/HO-II/5/7 and TM/HO-II/5/8. Use the handouts to demonstrate the use of the present value annuity tables. This table helps reflect a value today of "stream" of earnings in the future.

3. How is the index of profitability used?

Use TM/HO-II/5/8 to demonstrate the use of the index of profitability. Explain this technique allows the comparison of investments of alternative rates of return, length of life, etc. and select the most profitable alternative.

a. As a simple example, if the present value of an investment is greater than its cost, it is profitable - the present value of earnings from a $100 investment is $105. The index of profitability is 1.05 (105 divided by 100 = 1.05). When the index is 1 or over it is profitable with the highest index indicating the most profitability.

b. This example is based on the opportunity of an orchardist to purchase a neighboring 40 acres of cherry orchard at $8,500/acre or a total of $340,000. Assume the orchardist is 55 years old and expects to keep the orchard 10 years and conservatively expects land inflation to average 4 percent.

1) Use the information on the work sheet of TM/HO I-5-5 to determine the index of profitability of this alternative.

2) Compare this to the index of profitability of investing $100,000 in interest bearing securities compounding annually at 8%.

3) Of the above examples the 40 acre orchard appears to be the better investment, but it has this advantage based on the 6 percent inflation rate.

4) Additional factors come to bear on a decision such as this, for example non-monetary gains such as lifestyle, degree of risk, etc.

4. How are loan repayment (annuity) tables used?

Use TM/HO-II/5/9 and TM/HO-II/5/10 to demonstrate the use of annuity tables. Point out that even though many of the previous examples were profitable they may not be feasible unless the debt associated with them is serviceable Being able to use annuity tables is very important in planning future changes in the orchard operation.

a. Distribute TM/HO-II/5/9 and TM/HO -II/5/10 Explain that TM/HO -II/5/9 is an amortization schedule table that is used to determine the principal and interest due each year to service a loan for a given number of years and interest rate.

1) A simple example is if a $1 is borrowed for 10 years at 10 percent the annual payment is .1628 and the total interest paid would be $.62.

2) A slight difference in interest over the life of the loan can have a great difference on the total interest paid and the monthly payments. Example 1 gives the differences for a $50,000 loan on a 10 year at 10% and 11%.

3) Length of the loan affects total interest on the same loan amounts and interest rate. It is often amazing, the small amount of change in payment between loans over 2 different periods. Example 2 gives the annual payment and total interest paid of two $80,000 loans one at 10 and the other at 30 years.

5. Instructors may wish to use one of the two alternate methods for calculating future values, net present values and amortization.

   a. Many calculators are available and simple to use which can calculate these time values and could be used as a replacement to tables when making calculations.

      1) It may prove helpful to demonstrate the use of these calculators to make enrollees aware of their availability. These types of business calculators are reasonably priced and could be useful to most orchardists.

      2) It may prove useful to purchase enough calculators to be used by enrollees in Unit II classes to be used in class and on loan for the orchard use.

   b. Demonstrations for some of the examples using Lotus 1-2-3 functions for calculating net present value, future value and amortization.

F. Group Discussion

Sufficient time should be allotted for enrollees to ask questions and discuss the concepts of time value of money. Be sure the discussion session enables enrollees to be able to use the concept in making plans in their farming operations.

G. Conclusions

Conclusions which may be reached include:

1. Time affects the value of money.

2. Short term investments (less than one year) can be compared without using the concept of time value of money.

3. In making comparison between investments, the income should be calculated using net present values.

4. Compounding may be used to determine the affect of inflation on future purchases.

5. The index of profitability permits the comparison of investments of various sizes, returns, payback periods, etc.

6. An investment must not only be profitable it must be feasible. Amortization tables help determine the feasibility of servicing the debt of an investment.

7. The shorter the number of years of a loan the less total interest paid.

8. A small reduction or increase in interest rate can greatly effect the total interest paid over the life of a loan.

H. On-the-Orchard-Instruction

Suggest to enrollees that during the visits this month, a comparison of some alternative investments they have in their long range plans might be made. Suggest they have some cost figure and return estimates available which may be used for these projections.

I. Materials Needed

Instructor/Enrollees

TM/HO II-5-1 Future Value at Compound Interest Table

TM/HO II-5-2 Future Value Example 1 and 2

TM/HO II-5-3 Future Value of Annuity of 1 Table

TM/HO II-5-4 Present Value of 1

TM/HO II-5-5 Present Value Example 1

TM/HO II-5-6 Present Value of Annuity of 1 Table

TM/HO II-5-7 Present Value Example 2

TM/HO II-5-8 Index of Profitability Example

TM/HO II-5-9 Annual Amortization Table

TM/HO II-5-10 Amortization Examples 1 and 2

Optional

Business Calculators

Computers and Lotus 1-2-3

TM/HO-II/5/1

Year	11%	12%	13%	14%	15%	16%
1	1.1100	1.1200	1.1300	1.1400	1.1500	1.1600
2	1.2321	1.2544	1.2769	1.2996	1.3225	1.3456
3	1.3676	1.4049	1.4428	1.4815	1.5208	1.5608
4	1.5180	1.5735	1.6304	1.6889	1.7490	1.8106
5	1.6850	1.7623	1.8424	1.9254	2.0113	2.1003
6	1.8704	1.9738	2.0819	2.1949	2.3130	2.4363
7	2.0761	2.2106	2.3526	2.5022	2.6600	2.8262
8	2.3045	2.4759	2.6584	2.8525	3.0590	3.2784
9	2.5580	2.7730	3.0040	3.2519	3.5178	3.8029
10	2.8394	3.1058	3.3945	3.7072	4.0455	4.4114
11	3.1517	3.4785	3.8358	4.2262	4.6523	5.1172
12	3.4984	3.8959	4.3345	4.8179	5.3502	5.9360
13	3.8832	4.3634	4.8980	5.4924	6.1527	6.8857
14	4.3104	4.8871	5.5347	6.2613	7.0757	7.9875
15	4.7845	5.4735	6.2542	7.1379	8.1370	9.2655
16	5.3108	6.1303	7.0673	8.1372	9.3576	10.7480
17	5.8950	6.8660	7.9860	9.2764	10.7612	12.4676
18	6.5435	7.6899	9.0242	10.5751	12.3754	14.4625
19	7.2633	8.6127	10.1974	12.0556	14.2317	16.7765
20	8.0623	9.6462	11.5230	13.7434	16.3665	19.4607
21	8.9491	10.8038	13.0210	15.6675	18.8215	22.5744
22	9.9335	12.1003	14.7138	17.8610	21.6447	26.1863
23	11.0262	13.5523	16.6266	20.3615	24.8914	30.3782
24	12.2391	15.1786	18.7880	23.2122	28.6251	35.2364
25	13.5854	17.0000	21.2305	26.4619	32.9189	40.8742
26	15.0798	19.0400	23.9905	30.1665	37.8567	47.4141
27	16.7386	21.3248	27.1092	34.3899	43.5353	55.0003
28	18.5799	23.8838	30.6334	39.2044	50.0656	63.8004
29	20.6236	26.7499	34.6158	44.6931	56.5754	74.0085
30	22.8922	29.9599	39.1158	50.9501	66.2117	85.8498
31	25.4104	33.5551	44.2009	58.0831	76.1435	99.5858
32	28.2055	37.5817	49.9470	66.2148	87.5650	115.5105
33	31.3082	42.0915	56.4402	75.4848	100.6998	134.0027
34	34.7521	47.1425	63.7774	86.0528	115.8047	155.4431
35	38.5748	52.7996	72.0685	98.1001	133.1755	180.3140
36	42.8180	59.1355	81.4374	111.8341	153.1518	209.1643
37	47.5280	66.2318	92.0242	127.4909	176.1246	242.6305
38	52.7561	74.1796	103.9874	145.3397	202.5433	281.4514
39	58.5593	83.0812	117.5057	165.6872	232.9248	326.4837
40	65.0008	93.0509	132.7815	188.8834	267.8635	378.7211
41	72.1509	104.2170	150.0431	215.3271	308.0430	439.3164
42	80.0875	116.7231	169.5487	245.4729	354.2495	509.6071
43	88.8971	130.7299	191.5900	279.8392	407.3869	591.1442
44	98.6758	146.4174	216.4297	319.0166	468.4949	685.7273
45	109.5302	163.9875	244.6413	363.6790	538.7692	795.4437
46	121.5705	183.6661	276.4447	414.5940	619.5845	922.7147
47	134.9522	205.7060	312.3825	472.6372	712.5222	1070.3491
48	149.7969	230.3907	352.9923	538.8064	819.4006	1241.6049
49	166.2746	248.0376	398.8813	614.2393	942.3106	1440.2617
50	184.5648	239.0021	450.7358	700.2328	1083.6573	1670.7035

FUTURE VALUE AT COMPOUND INTEREST

$F.V.=(1+1)^n$

Year	4%	5%	6%	7%	8%	9%	10%
1	1.0400	1.0500	1.0600	1.0700	1.0800	1.0900	1.1000
2	1.0816	1.1025	1.1236	1.1449	1.1664	1.1881	1.2100
3	1.1248	1.1576	1.1910	1.2250	1.2597	1.2950	1.3310
4	1.1698	1.2155	1.2624	1.3107	1.3604	1.4113	1.4641
5	1.2166	1.2762	1.3382	1.4025	1.4693	1.5386	1.6105
6	1.2653	1.3400	1.4185	1.5007	1.5868	1.6771	1.7715
7	1.3159	1.4071	1.5036	1.6058	1.7138	1.8280	1.9487
8	1.3685	1.4774	1.5938	1.7181	1.8509	1.9925	2.1435
9	1.4233	1.5513	1.6894	1.8384	1.9990	2.1718	2.3579
10	1.4802	1.6288	1.7908	1.9671	2.1589	2.3673	2.5937
11	1.5394	1.7103	1.8982	2.1048	2.3316	2.5804	2.8531
12	1.6010	1.7958	2.0121	2.2521	2.5181	2.8126	3.1384
13	1.6650	1.8856	2.1329	2.4098	2.7196	3.0658	3.4522
14	1.7316	1.9799	2.2609	2.5785	2.9371	3.3417	3.7974
15	1.8009	2.0789	2.3965	2.7590	3.1721	3.6424	4.1772
16	1.8729	2.1828	2.5403	2.9521	3.4259	3.9703	4.5949
17	1.9479	2.2920	2.6927	3.1588	3.7000	4.3276	5.0544
18	2.0258	2.4066	2.8543	3.3799	3.9960	4.7171	5.5599
19	2.1068	2.5269	3.0255	3.6165	4.3157	5.1416	6.1139
20	2.1911	2.6532	3.2071	3.8696	4.6609	5.6044	6.7274
21	2.2787	2.7859	3.3995	4.1405	5.0338	6.1088	7.4002
22	2.3699	2.9252	3.6035	4.4304	5.4365	6.6586	8.1402
23	2.4647	3.0715	3.8197	4.7405	5.8714	7.2578	8.9543
24	2.5633	3.2250	4.0489	5.0723	6.3411	7.9110	9.8497
25	2.6658	3.3863	4.2918	5.4274	6.8484	8.6230	10.8347
26	2.7724	3.5556	4.5493	5.8073	7.3963	9.3991	11.9181
27	2.8833	3.7334	4.8223	6.2138	7.9880	10.2450	13.1099
28	2.9987	3.9201	5.1116	6.6488	8.6271	11.1671	14.4209
29	3.1186	4.1161	5.4183	7.1142	9.3172	12.1721	15.8631
30	3.2433	4.3219	5.7434	7.6122	10.0626	13.2676	17.4494
31	3.3731	4.5380	6.0881	8.1451	10.8676	14.4617	19.1943
32	3.5080	4.7649	6.4533	8.7152	11.7370	15.7633	21.1137
33	3.6483	5.0031	6.8405	9.3253	12.6760	17.1820	23.2251
34	3.7943	5.2533	7.2510	9.9781	13.6901	18.7284	25.5476
35	3.9460	5.5160	7.6860	10.6765	14.7853	20.4139	28.1024
36	4.1039	5.7918	8.1472	11.4239	15.9681	22.2512	30.9126
37	4.2630	6.0814	8.6360	12.2236	17.2456	24.2533	34.0039
38	4.4388	6.3854	9.1542	13.0792	18.6252	26.4366	37.4043
39	4.6163	6.7047	9.7035	13.9948	20.1152	28.8160	41.1448
40	4.8010	7.0399	10.2857	14.9744	21.7245	31.4094	45.2592
41	4.9930	7.3919	10.9028	16.0226	23.4624	34.2362	49.7851
42	5.1927	7.7615	11.5570	17.1442	25.3394	37.3175	54.7636
43	5.4004	8.1496	12.2504	18.3443	27.3666	40.6761	60.2400
44	5.6165	8.5571	12.9854	19.6284	29.5559	44.3369	66.2640
45	5.8411	8.9850	13.7646	21.0024	31.9204	48.3272	72.8904
46	6.0748	9.4342	14.5904	22.4726	34.4740	52.6767	80.1795
47	6.3178	9.9059	15.4659	24.0457	37.2320	57.4176	88.1974
48	6.5705	10.4012	16.3938	25.7289	40.2105	62.5852	97.0172
49	6.8333	10.9213	17.3775	27.5299	43.4274	68.2179	106.7189
50	7.1066	11.4673	18.4201	29.4570	46.9016	74.3575	117.3908

COMPARE THE COST OF LIFE INSURANCE

(1) Type Policy and/or Company	(2) Annual Premium	(3) Opportunity Cost of $1 @______%	(4) Opportunity Cost of Policy	(5) Projected Cash Value at age ___	Cost of Protection

As an example, if a $10,000 whole life policy can be purchased at age 25 for $170 annual premiums; 5% is the estimated interest cost; and the cash value at age 65 for the policy is $11,420; the cost of $10,000 protection for 40 years is $9,114.30. (see below)

Whole Life	$170[1]	$120.79[2]	$20,534.30[3]	$11,420.00[4]	$9,114.30[5]

1. Annual premium on policy - get from insurance agent.

2. The number of dollars you would have in a savings account if you put $1.00 per year in for 40 years @ 5% and it was compounded annually. Use Future Value Table, HO30.

3. The number of dollars you would have in a savings account if you put $170.00 per year in for 40 years @ 5% and it was compounded annually. In this table, column 3 is arrived at by multiplying column 1 X column 2.

4. The estimated or projected cash value - get this information from the policy or the insurance agent.

5. Net cost of protection - subtract column 4 from column 3.

(NOTE: The interest rate used in the Future Value Table is important - be realistic on what you can earn and/or pay.

TM/HO-II/5/2

FUTURE VALUE AT COMPOUND INTEREST - EXAMPLE

USE THE FUTURE VALUE AT COMPOUND INTEREST TABLE TO DETERMINE THE COST OF A NEW 60 HORSEPOWER, LOW PROFILE TRACTOR FIVE YEARS DOWN THE RUN.

AVERAGE EXPECTED RATE OF INFLATION (a) ________

CURRENT PRICE OF THE ITEM (b) ________

COMPOUND INTEREST VALUE (c) ________

(b x c) FUTURE VALUE (COST) OF THE ITEM (d) ________

FUTURE VALUE OF ANNUITY OF 1

[illegible]/5/3	4%	5%	6%	7%	8%
1	1.0000	1.0000	1.0000	1.0000	1.0000
2	2.0400	2.0500	2.0600	2.0700	2.0800
3	3.1216	3.1525	3.1836	3.2149	3.2464
4	4.2464	4.3101	4.3746	4.4399	4.5061
5	5.4163	5.5256	5.6370	5.7507	5.8666
6	6.6329	6.8019	6.9753	7.1532	7.3359
7	7.8982	8.1420	8.3938	8.6540	8.9228
8	9.2142	9.5491	9.8974	10.2598	10.6366
9	10.5827	11.0265	11.4913	11.9779	12.4875
10	12.0061	12.5778	13.1807	13.8164	14.4865
11	13.4863	14.2067	14.9716	15.7835	16.6454
12	15.0258	15.9171	16.8699	17.8884	18.9771
13	16.6268	17.7129	18.8821	20.1406	21.4952
14	18.2919	19.5986	21.0150	22.5504	24.2149
15	20.0235	21.5785	23.2759	25.1290	27.1521
16	21.8245	23.6574	25.6725	27.8880	30.2242
17	23.6975	25.8403	28.2128	30.8402	33.7502
18	25.6454	28.1323	30.9056	33.9990	37.4502
19	27.6712	30.5390	33.7599	37.3789	41.4462
20	29.7780	33.0659	36.7855	40.9954	45.7619
21	31.9692	35.7192	39.9927	44.8651	50.4229
22	34.2479	38.5052	43.3922	49.0057	55.4567
23	36.6178	41.4304	46.9958	53.4361	60.8932
24	39.0826	44.5019	50.8155	58.1766	66.7647
25	41.6459	47.7270	54.8645	63.2490	73.1059
26	44.3117	51.1134	59.1563	68.6764	79.9544
27	47.0842	54.6691	63.7057	74.4838	87.3507
28	49.9675	58.4025	68.5281	80.6976	95.3388
29	52.9662	62.3227	73.6397	87.3465	103.9659
30	56.0849	66.4388	79.0581	94.4607	113.2832
31	59.3283	70.7607	84.8016	102.0730	123.3458
32	62.7014	75.2988	90.8897	110.2181	134.2135
33	66.2095	80.0637	97.3431	118.9334	145.9506
34	69.8579	85.0669	104.1837	128.2587	158.6266
35	73.6522	90.3203	111.4347	138.2368	172.3168
36	77.5983	95.8363	119.1208	148.9134	187.1021
37	81.7022	101.6281	127.2681	160.3374	203.0703
38	85.9703	107.7095	135.9042	172.5610	220.3159
39	90.4091	114.0950	145.0584	185.6402	238.9412
40	95.0255	120.7997	154.7619	199.6351	259.0565
41	99.8265	127.8397	165.0476	214.6095	280.7810
42	104.8195	135.2317	175.9505	230.6322	304.2435
43	110.0123	142.9933	187.5075	247.7764	329.5830
44	115.4128	151.1430	199.7580	266.1208	356.9496
45	121.0293	159.7001	212.7435	285.7493	386.5056
46	126.8705	168.6851	226.5081	306.7517	418.4260
47	132.9453	178.1194	241.0986	329.2243	452.9001
48	139.2632	188.0253	256.5645	353.2700	490.1321
49	145.8337	198.4266	272.9584	378.9989	530.3427
50	152.6670	209.3479	290.3359	406.5289	573.7701

FUTURE VALUE OF ANNUITY OF 1 (continued)

[illegible]/5/3	9%	10%	11%	12%	13%	14%
1	1.000	1.000	1.000	1.000	1.000	1.000
2	2.090	2.100	2.110	2.120	2.130	2.140
3	3.278	3.310	3.342	3.374	3.407	3.440
4	4.573	4.641	4.709	4.779	4.850	4.921
5	5.985	6.105	6.228	6.353	6.480	6.610
6	7.523	7.716	7.913	8.115	8.323	8.536
7	9.200	9.487	9.783	10.089	10.405	10.730
8	11.028	11.436	11.859	12.300	12.757	13.233
9	13.021	13.579	14.164	14.776	15.416	16.085
10	15.193	15.937	16.722	17.549	18.420	19.377
11	17.560	18.531	19.561	20.655	21.814	23.045
12	20.141	21.384	22.713	24.133	25.650	27.271
13	22.953	24.523	26.212	28.029	29.985	32.089
14	26.019	27.975	30.095	32.393	34.883	37.581
15	29.361	31.772	34.405	37.280	40.417	43.842
16	33.003	35.950	39.190	42.753	46.672	50.980
17	36.974	40.545	44.501	48.884	53.739	59.118
18	41.301	45.599	50.396	55.750	61.725	68.394
19	46.018	51.159	56.939	63.440	70.749	78.969
20	51.160	57.275	64.203	72.052	80.947	91.025
24	76.790	88.497	102.174	118.155	136.831	158.659
25	84.701	98.347	114.413	133.334	155.620	181.871
30	136.308	164.494	199.021	241.333	293.199	356.787
36	236.125	299.127	380.164	484.463	618.749	791.673
40	337.882	442.593	581.826	767.091	1013.704	1342.025
48	684.280	960.172	1352.700	1911.590	2707.633	3841.475
50	815.084	1163.909	1668.771	2400.018	3459.507	4994.521

PRESENT VALUE OF 1

TM/HO-II/5/4

Year	4%	5%	6%	7%	8%	9%
1	0.9615	0.9523	0.9433	0.9345	0.9259	0.9174
2	0.9245	0.9070	0.8899	0.8734	0.8573	0.8416
3	0.8889	0.8638	0.8396	0.8163	0.7938	0.7721
4	0.8548	0.8227	0.7920	0.7629	0.7350	0.7084
5	0.8219	0.7835	0.7472	0.7130	0.6805	0.6499
6	0.7903	0.7462	0.7049	0.6663	0.6301	0.5962
7	0.7599	0.7106	0.6650	0.6227	0.5834	0.5470
8	0.7306	0.6768	0.6274	0.5820	0.5402	0.5018
9	0.7025	0.6446	0.5918	0.5439	0.5002	0.4604
10	0.6755	0.6139	0.5583	0.5083	0.4631	0.4224
11	0.6495	0.5846	0.5267	0.4751	0.4288	0.3875
12	0.6245	0.5568	0.4969	0.4440	0.3971	0.3555
13	0.6005	0.5303	0.4688	0.4150	0.3676	0.3262
14	0.5774	0.5050	0.4423	0.3878	0.3404	0.2992
15	0.5552	0.4810	0.4172	0.3624	0.3152	0.2745
16	0.5339	0.4581	0.3936	0.3387	0.2918	0.2518
17	0.5133	0.4362	0.3713	0.3166	0.2702	0.2310
18	0.4936	0.4155	0.3503	0.2959	0.2502	0.2119
19	0.4746	0.3957	0.3305	0.2765	0.2317	0.1944
20	0.4563	0.3768	0.3118	0.2584	0.2145	0.1784
21	0.4388	0.3589	0.2941	0.2415	0.1986	0.1636
22	0.4319	0.3418	0.2775	0.2257	0.1839	0.1501
23	0.4057	0.3255	0.2617	0.2109	0.1703	0.1337
24	0.3901	0.3100	0.2469	0.1971	0.1576	0.1264
25	0.3751	0.2953	0.2329	0.1842	0.1460	0.1159
26	0.3606	0.2812	0.2198	0.1722	0.1352	0.1063
27	0.3468	0.2678	0.2073	0.1609	0.1251	0.0976
28	0.3334	0.2550	0.1956	0.1504	0.1159	0.0895
29	0.3206	0.2429	0.1845	0.1406	0.1073	0.0821
30	0.3083	0.2313	0.1741	0.1314	0.0993	0.0753
31	0.2964	0.2203	0.1642	0.1228	0.0920	0.0691
32	0.2850	0.2098	0.1549	0.1147	0.0852	0.0634
33	0.2740	0.1998	0.1461	0.1072	0.0788	0.0582
34	0.2635	0.1903	0.1379	0.1002	0.0730	0.0533
35	0.2534	0.1812	0.1301	0.0936	0.0676	0.0489
36	0.2436	0.1726	0.1227	0.0875	0.0625	0.0449
37	0.2342	0.1644	0.1157	0.0818	0.0579	0.0412
38	0.2252	0.1566	0.1092	0.0765	0.0536	0.0378
39	0.2166	0.1491	0.1030	0.0715	0.0497	0.0347
40	0.2082	0.1420	0.0972	0.0668	0.0460	0.0318
41	0.2002	0.1352	0.0917	0.0624	0.0426	0.0292
42	0.1925	0.1288	0.0865	0.0583	0.0395	0.0267
43	0.1851	0.1227	0.0816	0.0545	0.0365	0.0245
44	0.1780	0.1168	0.0770	0.0509	0.0338	0.0225
45	0.1711	0.1112	0.0726	0.0476	0.0313	0.0206
46	0.1646	0.1059	0.0685	0.0445	0.0290	0.0189
47	0.1582	0.1009	0.0646	0.0416	0.0268	0.0174
48	0.1521	0.0961	0.0609	0.0389	0.0248	0.0159
49	0.1463	0.0915	0.0575	0.0363	0.0230	0.0146
50	0.1407	0.0872	0.0542	0.0339	0.0213	0.0134

PRESENT VALUE OF 1

TM/HO-II/5/4

Year	10%	11%	12%	13%	14%
1	0.9090	0.9009	0.8928	0.8849	0.8771
2	0.8264	0.8116	0.7971	0.7831	0.7694
3	0.7513	0.7311	0.7117	0.6930	0.6749
4	0.6830	0.6587	0.6355	0.6133	0.5920
5	0.6209	0.5934	0.5674	0.5427	0.5193
6	0.5644	0.5346	0.5066	0.4803	0.4555
7	0.5131	0.4817	0.4523	0.4250	0.3996
8	0.4665	0.4339	0.4038	0.3761	0.3505
9	0.4240	0.3909	0.3606	0.3328	0.3075
10	0.3855	0.3521	0.3219	0.2945	0.2697
11	0.3509	0.3172	0.2874	0.2606	0.2366
12	0.3186	0.2858	0.2566	0.2307	0.2075
13	0.2896	0.2575	0.2291	0.2042	0.1820
14	0.2633	0.2319	0.2046	0.1806	0.1597
15	0.2393	0.2090	0.1826	0.1598	0.1400
16	0.2176	0.1882	0.1631	0.1414	0.1228
17	0.1978	0.1696	0.1456	0.1252	0.1077
18	0.1798	0.1528	0.1300	0.1108	0.0946
19	0.1635	0.1376	0.1161	0.0980	0.0829
20	0.1486	0.1240	0.1036	0.0867	0.0728
21	0.1351	0.1117	0.0925	0.0767	0.0638
22	0.1228	0.1006	0.0826	0.0679	0.0560
23	0.1116	0.0906	0.0737	0.0601	0.0491
24	0.1015	0.0817	0.0658	0.0532	0.0431
25	0.0922	0.0736	0.0588	0.0471	0.0378
26	0.0839	0.0663	0.0525	0.0416	0.0331
27	0.0762	0.0597	0.0468	0.0368	0.0291
28	0.0693	0.0538	0.0419	0.0326	0.0255
29	0.0630	0.0484	0.0373	0.0288	0.0223
30	0.0573	0.0436	0.0333	0.0255	0.0196
31	0.0520	0.0393	0.0298	0.0226	0.0172
32	0.0473	0.0354	0.0266	0.0200	0.0151
33	0.0430	0.0319	0.0237	0.0177	0.0132
34	0.0391	0.0287	0.0212	0.0156	0.0116
35	0.0355	0.0259	0.0189	0.0138	0.0101
36	0.0323	0.0233	0.0169	0.0122	0.0089
37	0.0294	0.0210	0.0150	0.0108	0.0078
38	0.0267	0.0189	0.0134	0.0096	0.0068
39	0.0243	0.0170	0.0120	0.0085	0.0060
40	0.0220	0.0153	0.0107	0.0075	0.0052
41	0.0200	0.0138	0.0095	0.0066	0.0046
42	0.0182	0.0124	0.0085	0.0058	0.0040
43	0.0166	0.0112	0.0076	0.0052	0.0035
44	0.0150	0.0101	0.0068	0.0046	0.0031
45	0.0137	0.0091	0.0060	0.0040	0.0027
46	0.0124	0.0082	0.0054	0.0036	0.0024
47	0.0113	0.0074	0.0048	0.0032	0.0021
48	0.0103	0.0066	0.0043	0.0028	0.0018
49	0.0093	0.0060	0.0038	0.0025	0.0016
50	0.0085	0.0054	0.0034	0.0022	0.0014

PRESENT VALUE OF ONE - EXAMPLE

USE THE PRESENT VALUE OF ONE TABLE TO DETERMINE THE "BUYING POWER" OF A PROJECTED RETIREMENT INCOME. A COUPLE HAS ESTABLISHED AN ESTATE PLAN WHICH WILL PROVIDE THEM WITH A MONTHLY INCOME OF $3,000 ON THEIR RETIREMENT IN TEN YEARS. THEY WANT TO ESTIMATE IF THEY CAN LIVE ON THAT AMOUNT.

MONTHLY INCOME (a) ________

AVERAGE ANNUAL EXPECTED RATE OF INFLATION (b) ________

PRESENT VALUE RATE (c) ________

(a x c) PRESENT VALUE OF INCOME (d) ________

TM/HO-II/5/6

PRESENT VALUE OF ANNUITY OF 1

Year	4%	5%	6%	7%	8%
1	0.9615	0.9523	0.9433	0.9345	0.9259
2	1.8860	1.8594	1.8333	1.8080	1.7832
3	2.7750	2.7232	2.6730	2.6243	2.5770
4	3.6298	3.5459	3.4651	3.3872	3.3121
5	4.4518	4.3294	4.2123	4.1001	3.9927
6	5.2421	5.0756	4.9173	4.7665	4.6228
7	6.0020	5.7863	5.5823	5.3892	5.2063
8	6.7327	6.4632	6.2097	5.9712	5.7466
9	7.4353	7.1078	6.8016	6.5152	6.2468
10	8.1108	7.7217	7.3600	7.0235	6.7100
11	8.7604	8.3064	7.8868	7.4986	7.1389
12	9.3850	8.8632	8.3838	7.9426	7.5360
13	9.9856	9.3935	8.8526	8.3576	7.9037
14	10.5631	9.8986	9.2949	8.7454	8.2442
15	11.1183	10.3796	9.7122	9.1079	8.5594
16	11.6522	10.8377	10.1058	9.4466	8.8513
17	12.1656	11.2740	10.4772	9.7632	9.1216
18	12.6592	11.6895	10.8276	10.0590	9.3718
19	13.1339	12.0853	11.1581	10.3355	9.6035
20	13.5903	12.4622	11.4699	10.5940	9.8181
21	14.0291	12.8211	11.7640	10.8355	10.0168
22	14.4511	13.1630	12.0415	11.0612	10.2007
23	14.8568	13.4885	12.3033	11.2721	10.3710
24	15.2469	13.7986	12.5503	11.4693	10.5287
25	15.6220	14.0939	12.7833	11.6535	10.6747
26	15.9827	14.3751	13.0031	11.8257	10.8099
27	16.3295	14.6430	13.2105	11.9867	10.9351
28	16.6630	14.8981	13.4061	12.1371	11.0510
29	16.9837	15.1410	13.5907	12.2776	11.1584
30	17.2920	15.3724	13.7648	12.4090	11.2577
31	17.5884	15.5928	13.9290	12.5318	11.3497
32	17.8735	15.8026	14.0840	12.6465	11.4349
33	18.1476	16.0025	14.2302	12.7537	11.5138
34	18.4111	16.1929	14.3681	12,8540	11.5869
35	18.6646	16.3741	14.4982	12.9476	11.6545
36	18.9082	16.5468	14.6209	13.0352	11.7171
37	19.1425	16.7112	14.7367	13.1170	11.7751
38	19.3678	16.8678	14.8460	13.1934	11.8288
39	19.5844	17.0170	14.9490	13.2649	11.8785
40	19.7927	17.1590	15.0462	13.3317	11.9246
41	19.9930	17.2943	15.1380	13.3941	11.9672
42	20.1856	17.4232	15.2245	13.4524	12.0066
43	20.3707	17.5459	15.3061	13.5069	12.0432
44	20.5488	17.6627	15.3831	13.5579	12.0770
45	20.7200	17.7740	15.4558	13.6055	12.1084
46	20.8846	17.8800	15.5243	13.6500	12.1374
47	21.0429	17.9810	15.5890	13.6916	12.1642
48	21.1951	18.0771	15.6500	13.7304	12.1891

TM/HO-II/5/6

PRESENT VALUE OF ANNUITY OF 1 (continued)

Year	9%	10%	11%	12%	13%	14%
1	.917	.909	.901	.893	.885	.877
2	1.759	1.736	1.713	1.690	1.668	1.647
3	2.531	2.487	2.444	2.402	2.361	2.322
4	3.240	3.170	3.102	3.037	2.974	2.914
5	3.890	3.791	3.696	3.605	3.517	3.433
6	4.486	4.355	4.231	4.111	3.998	3.889
7	5.033	4.868	4.712	4.564	4.423	4.288
8	5.535	5.335	5.146	4.968	4.799	4.639
9	5.995	5.759	5.537	5.328	5.132	4.946
10	6.418	6.145	5.889	5.650	5.426	5.216
11	6.805	6.495	6.207	5.938	5.687	5.453
12	7.161	6.814	6.492	6.194	5.918	5.600
13	7.487	7.103	6.750	6.424	6.122	5.842
14	7.786	5.367	6.982	6.628	6.302	6.002
15	8.060	7.606	7.191	6.811	6.462	6.142
16	8.313	7.824	7.379	6.974	6.604	6.265
17	8.544	8.022	7.549	7.120	6.729	6.373
18	8.756	8.201	7.702	7.250	6.840	6.467
19	8.950	8.365	7.839	7.366	6.938	6.550
20	8.129	8.514	7.963	7.469	7.025	6.623
24	9.707	8.985	8.348	7.784	7.283	6.835
25	9.823	9.077	8.422	7.843	7.330	6.873
30	10.274	9.427	8.694	8.005	7.496	7.003
36	10.612	9.677	8.879	8.192	7.598	7.079
40	10.757	9.779	8.951	8.244	7.634	7.105
48	10.934	9.897	9.030	8.297	7.671	7.130
50	10.962	9.915	9.042	8.304	7.675	7.133

PRESENT VALUE OF AN ANNUITY OF ONE

EXAMPLE

USE THE PRESENT VALUE OF AN ANNUITY OF ONE TO DETERMINE THE "BUYING POWER" TODAY OF A STREAM OF SAVINGS.

IN THIS CASE, THE PROUD PARENTS OF A BOUNCING BABY GIRL SAVE $500 A YEAR FOR 18 YEARS FOR THEIR DAUGHTER'S COLLEGE EDUCATION. THEY WANT TO DETERMINE THE VALUE OF THIS MONEY ON TODAY'S STANDARDS.

YEARLY SAVINGS (a) ____________

AVERAGE ANNUAL EXPECTED RATE OF INFLATION (b) ____________

PRESENT VALUE OF ANNUITY RATE (c) ____________

NET PRESENT VALUE OF 18 YRS. SAVINGS (d) ____________

INDEX OF PROFITABILITY - EXAMPLE

AN ORCHARDIST HAS THE OPPORTUNITY TO PURCHASE A NEIGHBORING 40 ACRE CHERRY ORCHARD FOR A TOTAL OF $340,000.

THE ORCHARDIST HAS $100,000 TO PUT DOWN. HE CALCULATES HIS AVERAGE NET INCOME FROM THE ORCHARD TO BE $35,000 PER YEAR. HE CONSERVATIVELY EXPECTS THE LAND INFLATION RATE TO BE 4% AND THE OVERALL INFLATION RATE TO BE 5%.

ANNUAL EARNINGS

$35,000 X 7.7217 = $270,259.50

(TM/HO-II/5/6; 10 YRS.; 5%)

SALE OF FARM IN 10 YEARS AT 6%

$340,000 X 1.7908 = $608,872.00

(TM/HO-II/5/3; 10 YRS.; 6%)

PRESENT VALUE OF SALE OF FARM

$608,872 X .6139 = $373,786.52

(TM/HO-II/5/4)

TOTAL PRESENT VALUE OF EARNINGS = $644,046.02

INDEX OF PROFITABILITY

$$\frac{\$644{,}046.02}{\$340{,}000.00} = 1.89$$

INDEX OF PROFITABILITY - EXAMPLE

NOW COMPARE THIS INDEX OF PROFITABILITY WITH AN ALTERNATE INVESTMENT:

THE ORCHARDIST INVESTS HIS $100,000 DOWN IN INTEREST BEARING SECURITIES AT AN AVERAGE RATE OF 8 %

$100,000 X 2.1589 = $215,890.00

(TM/HO-II/5/3; 10 YRS.; 8%)

PRESENT VALUE OF INVESTMENT

$215,890 X .6755 = $145,833.69

(TM/HO-II/5/4; 10 YRS.; 4%)

INDEX OF PROFITABILITY

$$\frac{\$145,833.69}{\$100,000.00} = 1.46$$

ANNUAL AMORTIZATION TABLE

TM/HO-II/5/9

Year	4%	5%	6%	7%	8%
1	1.0400	1.0500	1.0600	1.0700	1.0800
2	0.5301	0.5378	0.5454	0.5530	0.5607
3	0.3603	0.3672	0.3741	0.3810	0.3880
4	0.2754	0.2820	0.2885	0.2952	0.3019
5	0.2246	0.2309	0.2373	0.2438	0.2504
6	0.1907	0.1970	0.2033	0.2097	0.2163
7	0.1666	0.1728	0.1791	0.1855	0.1920
8	0.1485	0.1547	0.1610	0.1674	0.1740
9	0.1344	0.1406	0.1470	0.1534	0.1600
10	0.1232	0.1295	0.1358	0.1423	0.1490
11	0.1141	0.1203	0.1267	0.1333	0.1400
12	0.1065	0.1128	0.1192	0.1259	0.1326
13	0.1001	0.1064	0.1129	0.1196	0.1265
14	0.0946	0.1010	0.1075	0.1143	0.1212
15	0.0899	0.0963	0.1029	0.1097	0.1168
16	0.0858	0.0922	0.0989	0.1058	0.1129
17	0.0821	0.0886	0.0954	0.1024	0.1096
18	0.0789	0.0855	0.0923	0.0994	0.1067
19	0.0761	0.0827	0.0896	0.0967	0.1041
20	0.0735	0.0802	0.0871	0.0943	0.1018
21	0.0712	0.0779	0.0850	0.0922	0.0998
22	0.0691	0.0759	0.0830	0.0904	0.0980
23	0.0673	0.0741	0.0812	0.0887	0.0964
24	0.0655	0.0724	0.0796	0.0871	0.0949
25	0.0640	0.0709	0.0782	0.0858	0.0936
26	0.0625	0.0695	0.0769	0.0845	0.0925
27	0.0612	0.0682	0.0756	0.0834	0.0914
28	0.0600	0.0671	0.0745	0.0823	0.0904
29	0.0588	0.0660	0.0735	0.0814	0.0896
30	0.0578	0.0650	0.0726	0.0805	0.0888
31	0.0568	0.0641	0.0717	0.0797	0.0881
32	0.0559	0.0632	0.0710	0.0790	0.0874
33	0.0551	0.0624	0.0702	0.0784	0.0868
34	0.0543	0.0617	0.0695	0.0777	0.0863
35	0.0535	0.0610	0.0689	0.0772	0.0858
36	0.0528	0.0604	0.0683	0.0767	0.0853
37	0.0522	0.0598	0.0678	0.0762	0.0849
38	0.0516	0.0592	0.0673	0.0757	0.0845
39	0.0510	0.0587	0.0668	0.0753	0.0841
40	0.0505	0.0582	0.0664	0.0750	0.0838
41	0.0500	0.0578	0.0660	0.0746	0.0835
42	0.0495	0.0573	0.0656	0.0743	0.0832
43	0.0490	0.0569	0.0653	0.0740	0.0830
44	0.0486	0.0566	0.0650	0.0737	0.0828
45	0.0482	0.0562	0.0647	0.0734	0.0825
46	0.0478	0.0559	0.0644	0.0732	0.0823
47	0.0475	0.0556	0.0641	0.0730	0.0822
48	0.0471	0.0553	0.0638	0.0728	0.0820
49	0.0468	0.0550	0.0636	0.0726	0.0818
50	0.0465	0.0547	0.0634	0.0724	0.0817

TM/HO-II/5/9

ANNUAL AMORTIZATION TABLE (continued)

Year	9%	10%	11%	12%	13%	14%
1	1.0900	1.1000	1.1100	1.1200	1.1300	1.1400
2	.5684	.5761	.5839	.5916	.5994	.6072
3	.3950	.4021	.4092	.4163	.4235	.4307
4	.3086	.3154	.3223	.3292	.3361	.3432
5	.2570	.2637	.2705	.2774	.2843	.2912
6	.2229	.2296	.2363	.2432	.2501	.2571
7	.1986	.2054	.2122	.2191	.2261	.2331
8	.1806	.1874	.1943	.2013	.2083	.2155
9	.1667	.1736	.1806	.1876	.1948	.2021
10	.1558	.1627	.1698	.1769	.1842	.1917
11	.1469	.1539	.1611	.1684	.1758	.1833
12	.1396	.1467	.1540	.1614	.1689	.1766
13	.1335	.1407	.1481	.1556	.1633	.1711
14	.1284	.1357	.1432	.1508	.1586	.1666
15	.1240	.1314	.1390	.1468	.1547	.1628
16	.1203	.1278	.1355	.1433	.1514	.1596
17	.1170	.1246	.1324	.1404	.1486	.1569
18	.1142	.1219	.1298	.1379	.1462	.1546
19	.1117	.1195	.1275	.1357	.1441	.1526
20	.1095	.1174	.1255	.1338	.1423	.1509
25	.1018	.1101	.1187	.1275	.1364	.1454
30	.0973	.1060	.1150	.1241	.1334	.1428
35	.0946	.1036	.1129	.1223	.1318	.1414
40	.0929	.1022	.1117	.1213	.1309	.1407

TM/HO-I/5/10

AMORTIZATION - EXAMPLE

A SLIGHT INCREASE IN INTEREST RATES CAN HAVE A PRONOUNCED AFFECT OVER THE LIFE OF A LOAN. THE FOLLOWING EXAMPLE SHOWS THE EFFECT OF A 1 % INTEREST RATE DIFFERENCE ON A 30 YEAR LOAN FOR $150,000.

BORROWED AMOUNT = (a) $150,000

ANNUAL PAYMENT @ 10 %
$150,000 X .1627 = (b) $ 24,405
(TM/HO-II/5/8; 10%; 30 YR)

ANNUAL PAYMENT @ 11 %
$150,000 X .1698 = (c) $ 25,470
(TM/HO-II/5/8; 11%; 30 YR)

INCREASED ANNUAL PAYMENT = $ 1,065

INCREASE OVER THE LIFE
OF THE LOAN = $ 31,950

TM/HO-I/5/10

AMORTIZATION - EXAMPLE

THE NUMBER OF YEARS OF THE LIFE OF THE LOAN CAN HAVE A LARGE EFFECT ON INTEREST PAYED OVER THE LIFE OF THE LOAN.

THE FOLLOWING EXAMPLE SHOWS THE EFFECT OF A 15 YEAR LOAN VERSUS A 30 YEAR LOAN ON A $150,000 INVESTMENT AT 10 % INTEREST.

15 YEAR LOAN	30 YEAR LOAN
ANNUAL PAYMENT $150,000 X .1314 = $19,710	ANNUAL PAYMENT $150,000 X .1060 = $15,900
INTEREST PAYED OVER THE LIFE OF THE LOAN	INTEREST PAYED OVER THE LIFE OF THE LOAN
$19,710	$15,900
X 15 YRS	X 30 YRS
$295,650	$477,000
- $150,000	- $150,000
$145,650	$327,000

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

VI. Lesson 6: Utilizing Farm Credit

A. Review

The previous lesson, Using The Concept of Time Value of Money should be reviewed. Some conclusions from the previous lesson include:

1. Time effects the value of money.
2. Short term investments (less than one year) can be compared without using the concept of time value of money.
3. In making comparisons between investments, the income should be calculated using net present value.
4. Compounding tables may be used to determine the effect of inflation on future purchases.
5. The index of profitability permits the comparison of investments of various sizes, returns and payback periods.
6. An investment must not only be profitable it must be feasible. Amortization tables help determine the feasibility of servicing the debt involved with an investment.
7. The shorter the number of years of a loan the less the total interest payed.
8. A small change in the interest rate of a loan can greatly effect the total interest paid over the life of the loan.

B. Objective

To learn how to evaluate credit needs and how to compare lenders and different types of credit.

C. Motivation

1. Only 50 years ago owner/family labor accounted for 55 percent of all resources used in agriculture, land 15 percent and capital for 30 percent. Currently the utilization of resources has changed to the point where owner/family labor has dropped to 20 percent, land to 20 percent and capital as a resource has jumped to 60 percent.

2. Currently orcharding is at the point in which the wise use of credit is essential to the success of the operation. Practically no orchardist operates without substantial amounts of borrowed capital.

3. Credit when used wisely is an important resource to be used in the orchard operation but with it comes increasing managerial responsibilities.

D. Key Questions

1. What are three types of credit and how can they be used?

2. How should credit needs be planned?

3. What do lenders look for when loaning money?

4. What should borrowers look for in lenders?

5. What are the costs of credit?

E. Introduction of Information

1. What are the three types of credit and how can they be used to benefit the orchard operation?

   Use TM-II/6/1 to help explain the three types of credit.

   a. Short term credit, along with equity capital, is generally used in financing annual operations.

      1) These funds are used for production items such as labor, crop chemicals, fertilizers, etc.

      2) These items are generally used up in the normal operation of the business and once they are used their identity is lost.

      3) Short term operating loans are generally paid off within the year.

      4) Short term credit is offered by numerous sources including; commercial banks, Production Credit Association, Farmer's Home Administration, local cooperative lenders, dealers and merchants, sheds and warehouses.

      5) Often production loans are set up on a revolving basis or as a line of credit.

b. Intermediate term credit is used in financing production assets that will be used in more than one production period.

   1) The life on intermediate term assets is considered to be 1 to 10 years.

   2) Intermediate loans would apply to purchases of such items as machinery and equipment, new plantings or replanting of established orchards.

   3) These purchases are normally for depreciable property and have repayment terms of 1 to 7 years.

   4) Sources of this type of credit include: Production Credit Association, commercial banks, Farmer's Home Administration, local cooperative lenders, implement dealers, some insurance companies.

c. Long Term Credit is used to finance investments in land, buildings, replanting and new plantings of orchards and other fixed assets.

   1) The terms of this credit vary with repayment life being generally from 10 to 40 years. Federal Land Banks have loans with maturities of 5 to 40 years.

   2) Sources of long term credit include, Federal Land Banks, Farmer's Home Administration, commercial banks, insurance companies, local cooperative lenders and individuals such as loans involving contract for deed etc.

2. How should credit needs be planned?

Use TM-II/6/2 based on information from the Sample Orchard to demonstrate how cash flow projections can be used for planning for credit needs.

a. Plan well in advance for credit needs. This will avoid:

   1) Going into a lender in an unorganized, state of financial panic which is the worst image you can portray.

   2) This will also give you time to "shop around" for the best rate and terms your present situation will allow.

   3) You will be less likely to either under borrow or over borrow because of lack of time to properly analyze your credit needs.

4) You will be able to plan an alternate economic tack should the loan be denied.

b. Have your financial "ducks" in line. An organized presentation sends a very positive message to your lenders.

   1) Have your record book up to date and available to answer your lenders specific questions. They may include not only current years records but previous years as well.

   2) Have inventories in the book current and reflecting current conservative fair market values.

   3) Make sure the most recent packout records are easily accessible, preferably located in the record book.

c. Have a current cash flow projection ready for your lender to analyze.

   1) In evaluating a cash flow plan such as that presented on TM/HO-II/6/2 the item your lender will be most interested in is line D, cash before borrowing.

   2) As a lender looks at the cash before borrowing of the different months he will be able to determine the months where money will be needed and those where repayments will be made.

   3) The lender after seeing when and how much money will be needed during the year, will probably want to further analyze the information used to develop the plan.

   4) Lenders will try to get a handle on how conservative you are with your estimate figures and how realistic and workable the cash flow plan is.

d. Have a current financial statement and profit and loss statement completed.

   1) Though each lending institution may have its own version of these statements which you must complete you should have a goods version available which is understandable to you as well as your lender.

   2) Make sure, once again, that fair market values are on the conservative side of realistic. Lenders can quickly see through someone who is "padding" their net worth.

3. What do lenders look for when lending money?

Pass out TM/HO-II/6/3 and have enrollees take this self quiz. Explain this covers many of the questions the lender will ask herself when evaluating your loan application. Discuss the major points using TM-II/6/4.

a. Your lender will look at you and your individual qualifications as a borrower. She will consider:

1) Your past credit history with this lender as well as other creditors.

2) The effectiveness of your cultural management as well as the financial management of the operation.

3) Your reputation for honesty and integrity.

4) Your labor relations and ability to supply and maintain an adequate labor force.

5) Demographic information such as age, experience, education will also be considered in most situations.

b. Lenders rely heavily on the indicators of the financial health of the operation.

1) The cash flow summaries and projections. For most lenders "if it won't flow the loan won't go."

2) Financial statement and more specifically the ratios determined from that statement give lenders a tool to determine the status of the operation.

3) The profit and loss statement gives the lender a look at the growth of the operation as well as the overall profitability.

c. Lenders will base their decision on the purpose of the loan as well.

1) Lenders are interested in knowing how the loan is used to improve or increase the profitability of the operation.

2) This information should have already been analyzed by the borrower, through a partial budget and cash flow projection, in determining whether the credit was necessary.

d. Finally lenders will be interested in the collateral available to secure the loan.

   1) This will include the money (down payment) the individual is investing in the loan item.

   2) For most intermediate and long term loans the item provides the major security or collateral.

   3) The amount and type of security will vary based largely on other factors listed above and will vary from borrower to borrower.

5. What should borrowers look for in a lender?

   Use TM/HO-II/6/5 to help point out the major factors to consider when choosing a lender. TM/HO-II/6/6 gives some comparative information about many agricultural lending institutions. This information should be periodically reviewed by the instructor to keep items current and to write in appropriate interest rates reflecting current values.

   a. Factors to use to evaluate lending institutions:

      1) Lending policies - These are the credit terms of the lender. It is important that these terms are suitable to the borrower. Some questions to be answered;

         a) Are repayment schedules fitted to the earnings of the operation? It is important to know the type of credit the agency offers.

         b) What is the lending limit of the agency? Lending agencies sometimes have a limit on various types of credit and it is important to choose a lender that can fulfill your needs.

      2) Reasonable terms - One of the most important factors in selecting a lender is in the terms offered with various types of loans.

         a) Is the interest charge competitive with different agencies. As discussed in lesson 5 a 1/2 difference in interest rate over the life of a loan can mean big money?

         b) Is the lender flexible in setting up repayment schedules to fit the type of loan offered?

   c) What are their penalties for paying off the loan early or late?

   d) What type of security does the lender require on loans?

   e) Does the lender offer a line-of-credit loan for production loans?

3) Financial knowledge of the lender - A lender needs to be more than someone who simply shuffles papers. The lender needs to be someone who can help evaluate credit needs.

   a) It is critical that a lender help you evaluate the financial statement.

   b) He should also be able to spot "S O S" statements hidden in a borrower's cash flow and help stop bad investment situations before they become serious.

   c) A good lender is also familiar with the financial options available and the ability to explain them to borrowers and make recommendations as to individual situation.

4) Permanence and dependability - Most orchardists will be using borrowed money, at least on a short term basis, for as long as they are in business.

   a) It is important to choose a lending agency with a good "track record" in the agricultural community.

   b) Also select agencies which can service your credit needs as the business grows.

   c) Establishing a credit rating and a good working relationship with a lender is a timely process and it is important to select an agency that you can stay with for a long time.

5) Knowledge of Agriculture - Loaning money for agricultural use is different than loaning for other types of businesses and a lender needs to understand the peculiarities of agriculture.

   a) A lender should have a good knowledge of the production aspects of producing fruit.

b) They should also understand the pricing and price cycles associated with fruit crops.

b. Pass out copies of HO-II/6/6 to enrollees and go over the characteristics of common agricultural lenders. Point out that these descriptions are generalized and that individual agencies often vary among themselves in the way they do business.

5. What are the costs of credit?

Costs of credit will be discussed in two parts: first, looking at loan terminology and types of loans, and second looking at some specific examples of how the cost of credit is determined in some sample situations.

a. Loan Terminology and Types of Loans - Give enrollees HO-II/6/7 and discuss each item or loan concept with them. Have them relate experiences they may have had with various types of loans in the past.

b. Work through the examples presented in the handout and through similiar examples brought up by enrolees.

F. Group Discussion

Time should be allowed for any questions by enrollees concerning credit. Also address any discussion of credit problems not already covered in this material.

G. Conclusions

1. Credit is an essential and increasingly important resource to most orchard operations.

2. Production loans and merchant/warehouse accounts are often used to help finance annual operations.

3. Short term credit is often set up on a line of credit basis.

4. Intermediate loans are used toward the purchase of depreciable investments such as machinery, buildings, trees and irrigation equipment.

5. Long term credit is used for real estate purchases such as orchard land, buildings and new or replanted orchards.

6. Credit needs should be planned well in advance of the time when the funds are required.

7. Having your "financial ducks" in a row is important to lenders. This means having up-to-date records, cash flow projects, financial statement and profit and loss statement.

8. Lenders base their decisions on whether to grant a loan or not on the individual, the financial health of the operation, the purpose of the loan, the ability to repay and the security or collateral available.

9. Borrowers should evaluate lenders based on 5 factors, 1) lending policies, 2) terms, 3) financial knowledge of the lender, 4) permanence and dependability of the lender and 5) the lenders knowledge of agriculture.

10. Interest can be expressed in many ways and it is important for borrowers to know the real cost of credit or APR.

H. Orchard Visit

When visiting enrollees following this lesson, spend time with them looking at their individual credit situation. Explore any changes in their credit management that could be made to more effectively use borrowed capital. For example, should they explore developing a "line of credit" for short term financing? Are they paying too much for credit? Has their past cash flow planning been effective? Go over these types of questions with enrollees and help them think through their credit situation.

I. Materials Needed:

Instructor/Enrollees:

TM-I/6/1	Types of Credit
TM-II/6/2	Cash Flow Projection - Sample Orchard
TM/HO-II/6/3	Rate Yourself as a Credit Risk
TM/HO-II/6/4	What Lenders Look For
TM-II/6/5	Points to Consider in Choosing a Lender
TM/HO-II/6/6	Comparison of Various Agricultural Lending Institutions
HO-II/6/7	Loan Terminology

THREE CLASSIFICATIONS OF CREDIT

SHORT TERM

- USED TO FINANCE ANNUAL OPERATING INPUTS
- LESS THAN ONE YEAR
- SOURCES: BANKS, PCA, FHA, AND DEALERS

INTERMEDIATE TERM

- USED TO FINANCE PRODUCTION ASSETS WITH A 1-10 YEAR LIFE
- SOURCES: INDIVIDUALS, BANKS, PCA, FHA, DEALERS

LONG TERM

- USED TO FINANCE LAND, BUILDINGS, EQUIPMENT, AND OTHER FIXED CAPITAL WITH A LIFE OF OVER 10 YEARS
- SOURCES: INDIVIDUALS, FEDERAL LAND BANKS, FARMERS HOME ADMINISTRATION, INSURANCE COMPANIES, COMMERCIAL BANKS, SAVINGS & LOAN ASSOCIATIONS

FORM 24

CASH FLOW SUMMARY/PROJECTION

SUMMARY

YEAR 82

RECEIPTS	#	JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL
CROP RECEIPTS: ENT. #(S): 121	1	5200	3356	4500	7755	9555	17575			3780				51721
ENT. #(S): 122	2									1540		11500	5330	23370
ENT. #(S): 211	3										2640	27670	10660	40970
ENT. #(S): 212	4										850	13500	3467	17817
ENT. #(S): 313	5	6000	7173	12535	17565	14750					4900			63123
ENT. #(S): 314	6	5400		14305	5500					2310				27515
ENT. #(S): 531	7								24081					24081
ENT. #(S): 532	8								8109					8109
ENT. #(S): 533	9								3773					3773
ENT. #(S):	10													
ENT. #(S):	11													
ENT. #(S):	12													
ENT. #(S):	13													
ENT. #(S):	14													
ENT. #(S):	15													
ENT. #(S):	16													
CUSTOM WORK	17				210	210	210	210	210					1050
COOP PATRONAGE DIV./REF. ($ ONLY)	18													
ITAL SALES	19													
INTEREST	20	243	243	250	280	250	170	70	70	180	180	200	230	2366
BORROWED FUNDS (SUMMARY ONLY)	21							10,000			1150			11150
OTHER:	22													
NON-FARM INCOME	23													
TOTAL DOLLARS AVAILABLE	A	17403	11072	31610	31310	24765	17955	10280	46263	7610	9020	53150	19827	285503
EXPENDITURES														
LABOR: NET WAGES	24	3220	3064	2505			11740	7672	1823	7850	2547			41481
FICA/FED. INCOME TAX W/HOLDING	25	255		953				2140	1243		1517			6138
FUTA/STATE UNEMPLOY. INSURANCE	26	122			440			583			732			1877
STATE WORKERS COMPENSATION	27	233			829			850			902			2814
MISCELLANEOUS BENEFITS/HOUSING	28													
PEST CONTROL	29				1297	4560	816	1536	1548	102				9859
FERTILIZER/LIME	30			90	1007			25	10			90	405	1627
IRRIGATION ASSESSMENT	31				1922			400						2322
UTILITIES	32	59	88	46	92	43	101	65	327	65	75	150	65	1176
FUEL/OIL	33			372	222	462	252	329	395	320	350			2702
TRUCK/AUTO	34		229	350		25			16		85			705
REPLACEMENT TREES	35					400								400
MACHINERY MAINTENANCE	36		563	25		212	150		132	61				1143
IRRIGATION/BUILDING MAINTENANCE	37				250	150	75	150	400	11	25			1061
TAXES	38			2750	2234	3692			43					8719
INSURANCE	39		1800						350	350				2500
INTEREST	40	100	98	2858	1343	90	97	86	610	81	120	75	73	5632
HOUSE CHARGES: PACKING/HANDLING	41	7969	3099	11602	11124	8596	5714		4876			31250	10010	94620
CROP STORAGE	42								6685					6685
IND CHG.	43	348	227	425	413	323	238		580			1197	383	4434
OTHER: Misc. Service	44	100	100	500	100	2000	100	100						3000
Misc. Supplies	45	20	50	75	30	55	75	20			120	25	20	500
	46													
	47													
CAPITAL PURCH.: TREES/CAPITL'Z. EXP.	48			2200	200	410	725	608	124					4267
DEPRECIATED ITEMS	49										1500			1500
NON-DEPRECIATED ITEMS	50													
PRODUCTION LOANS (SUMMARY ONLY)	51								4980		5020			10000
INTERMEDIATE LOANS	52	232	234	237	1273	242	244	246	2159	251	254	257	259	5977
G TERM LOANS	53			17527										17527
ILY LIVING/OPERATORS SALARY	54	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	1500	3500	20000
TOTAL DOLLARS USED	B	14218	11052	44015	24276	22920	22098	16192	28161	10571	15827	34654	14715	[illegible]
CASH DIFFERENCE FOR MONTH (A - B)	C													
CASH BEFORE LOAN (C +/- F PREV. MO.)	D													
PROD. LOAN PROCEEDS + OR REPAYMENTS -	E													
CASH BALANCE END OF MONTH (D +/- E)	F													
PROD. LOAN BAL. (G PREV. MO. +/- E)	G													
		JAN.	FEB.	MARCH	APRIL	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	TOTAL

TM/HO-II/6/3

RATE YOURSELF AS A CREDIT RISK

Can you walk into your bank, production credit association, national farm loan association, or some other lender's office with confidence that you will rate a loan? Are you sure that you have a good proposition to offer? Or are you afraid you'll be turned down?

It all boils down to this -- Are you a good credit risk?

The answer to this question can't come out all in black and white. But there are some answers about you and your farming that your lender needs to know. If you'll take your pencil and check yourself yes or no on the accompanying list, you'll know about where you stand with the measuring stocks that lenders use.

So, let's divide the detailed questions lenders ask into some broad categories -- the borrower, the land, the farming plan, the records, and the loan. Check yes or no on each of the following check points and then turn to the back page for your rating as a good, medium, or poor credit risk.

Rate yourself before you look at the answers.

THE BORROWER -- the most important		YES	NO
1.	Do I let my bills run?	______	______
2.	Do I explain to my creditor why I can't meet a payment?	______	______
3.	Did I pay off more of my obligations in good times than I was obliged to?	______	______
4.	Do I resist a lender's suggestions about my business?	______	______
5.	Do I have a lot of bad luck?	______	______
6.	Is my health good enough for me to carry more debt?	______	______
7.	Am I farming the same way I did 10 years ago?	______	______
8.	Can I carry myself through a bad year or two?	______	______
9.	Can I cut my expenses in hard times?	______	______
10.	Do I take good care of my machinery?	______	______
11.	Does my family help make decisions?	______	______
12.	Does my family assist in the farming enterprises?	______	______

		YES	NO
13.	Do I keep up to date by reading farm magazines and other ways?	______	______
14.	Do I consider use of credit a normal part of my farming operation?	______	______
	THE LAND		
15.	Have I checked the past packout records of the orchard I'm buying?	______	______
16.	Will the land return enough to carry the mortgage for its 20- or 30-year life?	______	______
17.	Will the land support my family as well as the mortgage?	______	______
18.	Have I used any suggestions from the extension service?	______	______
19.	Are my crop yields average or better for my community?	______	______
20.	Have I inventoried the trees as to age, type, variety and general condition?	______	______
	THE FARMING PLAN		
21.	Do I know what I'll be doing on my orchard two years from now?	______	______
22.	Can my business program be adjusted to meet emergency situations?	______	______
23.	Have I checked to see which marketing or purchasing cooperative I'll be working with?	______	______
24.	Will I have anything left for farm improvements after living expenses and loan payments?	______	______
25.	Do I have the machinery, the tools I need?	______	______
26.	Have I a profitable "bread and butter" enterprise to back up any main-operation losses?	______	______

	YES	NO
27. Can I shift from parts of my operation which are a losing proposition?	______	______
28. Do I have plans for renovating or replanting older non-producing blocks?	______	______
THE RECORDS		
29. Do I keep my records in my head?	______	______
30. Can I tell how much money I made or lost last year?	______	______
31. Do I know if I made or lost money on separate operations?	______	______
32. Am I increasing my net worth (difference between what I own and what I owe)?	______	______
33. Are my debts large in relation to what I owe?	______	______
34. Do I have debts scattered among numerous creditors?	______	______
THE LOAN		
35. Will the money I borrow increase my income?	______	______
36. Do I always borrow on 60- and 90-day notes?	______	______
37. Am I going to have income when the loan payment comes due?	______	______
38. Have I checked for better terms elsewhere?	______	______
39. Is my loan written so I can pay off the debt, or part of it, ahead of the due date?	______	______
40. Do I only ask for credit the day or week I need it?	______	______

WHAT DO LENDERS LOOK FOR ?

- *   YOUR PERSONAL QUALIFICATION AS A BORROWER
- *   INDICATORS OF YOUR FINANCIAL HEALTH:
    - **   FINANCIAL STATEMENT
    - **   CASH FLOW STATEMENT
    - **   PROFIT & LOSS STATEMENT
- *   PURPOSE OF THE LOAN
- *   COLLATERAL TO SECURE THE LOAN

FACTORS IN SELECTING A LENDER

- * LENDING POLICIES OF THE INSTITUTION
- * REASONABLE TERMS
- * FINANCIAL KNOWLEDGE OF LENDER
- * PERMANENCE AND DEPENDABILITY
- * KNOWLEDGE OF AGRICULTURE

LOAN TERMINOLOGY AND TYPES OF LOANS

Cost of Credit--The money cost of borrowed capital is determined by the difference between dollars actually available to be spent for production or investment purposes and the total money paid to retire the loan. In addition to actual interest, the money cost of borrowed capital may include service charges, loan closing fees, carrying charges, fees for credit reports and appraisal fees. Any non-interest costs which are included as a condition of the loan should be included in the APR quoted by the lender. An example of this would be a loan of $1,000 for a year at 14 percent simple interest plus a $25.00 service charge. The cost of this loan would be $140 plus the $25 service charge making an APR of 16.5%.

Prime Rate--The prime rate is defined to be the lowest interest rate being charged at any point in time by commercial banks for short-term loans. The prime interest rate being quoted on the nationwide money market, however, may be quite a lot higher than the interest on agricultural loans from various local agriculture lending sources. Each local lender also has a "prime rate" which is the rate being charged lowest-risk borrowers for their credit.

APR (Annual Percentage Rate)--According to the Truth in Lending legislation passed by the U.S. Congress, lenders must inform borrowers of (a) the total finance charge on a loan and (b) the annual interest rate based upon compound interest tables. This is known as full disclosure of total finance costs in terms of annual percentage rate (APR). All lenders must inform borrowers of the APR of any loan they are processing with a written statement required under truth in lending provisions. Remember that APR includes the interest rate being charged plus any other costs associated with the loan.

Simple Interest Loan--A simple interest loan is one in which the interest is paid only on the unpaid loan balance. Interest is computed by multiplying the loan balance outstanding by the contractual interest rate and interest is only paid for the time the money is borrowed. Technically, simple interest refers to a single payment loan. Principal and interest are paid when the note comes due or at a prior date. Simple interest loans are generally made for a year or less.

The formula for figuring interest cost on simple interest loans is as follows:

Interest Cost = Principal x Interest Rate x Time (Years)

Example: $2,000 at 15% for 6 months

$2,000 x .15 x 6/12 = $150

(cont'd)

The formula for figuring interest rate on simple interest loans is as follows:

$$\text{Simple Interest Rate} = \frac{\text{Dollar Cost of Credit}}{\text{Principal x Time}}$$

Example: $2,000 used for one year with an interest charge of $300.

$$\frac{\$300}{\$2{,}000 \times 1} = .15 \text{ or } 15\% \text{ per year}$$

Add-On Interest Loans--Under this method, interest is figured on the full face value of the loan for the entire loan period. Interest is computed on the loan amount for the full term at the time the loan is made and then "added on." This amount (principal plus interest) is then divided equally by the number of payments to be made. The borrower is paying interest on the full original value of the note and only has use of part of the initial balance once principal payments are started. This loan is sometimes referred to as the "flat rate" loan.

The formula for estimating the APR interest rate on an add-on loan is as follows:

$$\begin{array}{l}\text{(APR) Annual}\\ \text{Interest Rate}\end{array} = \frac{2 \times \text{No. of Payments/Yr.} \times \overset{\text{(interest + charges)}}{\$ \text{ Cost of Credit}}}{\underset{\text{(initially)}}{\text{Amount Borrowed}} \times (\text{Total No. of Payments} + 1)}$$

Example: $1,000 loan for 4 years with 15 percent add-on interest with semi-annual payments. $1,000 x 15% = $150 x 4 yrs. = $600 interest added on.

$$\begin{array}{l}\text{(APR) Annual}\\ \text{Interest Rate}\end{array} = \frac{2 \times 2 \times \$600}{\$1{,}000 \times (8 + 1)} = \frac{2{,}400}{9{,}000} = .267 \text{ or } 26.7\%$$

Discount or Front-End Loans--In a discounted loan, the interest is taken out first; i.e., the interest and any other loan charges are calculated and then subtracted from the principal. As an example, a $3,000 loan at 15 percent interest for one year would result in the borrower only receiving $2,550 to use when the loan is made and the $3,000 debt would be paid back by the end of the year as specified. Use the same formula for estimating the true (APR) Annual Interest Rate on a discounted loan as you would for an add-on loan.

Example: $1,000 loan for 1 year at 15 percent interest discounted with 1 payment at the end of the year. $1,000 x 15% = $150 x 1 yr. = $150 total interest paid. $1,000 - $150 = $850 actual credit obtained.

$$\text{(APR) Annual Interest Rate} = \frac{2 \times 1 \times \$150}{\$850 \times (1 + 1)} = \frac{300}{1{,}700} = .176 \text{ or } 17.6\%$$

Balloon Loan--A balloon type loan requires only interest payments each period until the final payment where all the principal is due at once. In some cases, a principal payment is made each time the interest payment is made, but the principal payments do not pay off the entire loan and a large portion of the principal is due at the loan maturity date. Balloon loans are commonly used when the purchased assets do not create enough cash flow to pay on principal for some time.

Example: A $10,000 loan for 3 years to buy 25 beef heifers at 14 percent simple interest with principal paid in one balloon payment at the end of the 3 years.

$10,000 x 14% = $1,400 interest each year

Year	Payment
1	$1,400 interest
2	$1,400 interest
3	$1,400 interest
4	$1,400 interest and $10,000 principal

Amortized Loans--The amortized loan is a partial payment plan where part of the principal plus interest on the unpaid loan balance are repaid each year. There are two main types of amortization plans: (a) the decreasing payment plan and (b) the equal payment plan.

Under the decreasing payment plan, the loan is repaid in equal principal payments and each payment period, the interest is figured on only the remaining loan balance. This type of loan can be a hardship to young borrowers because of the large debt service requirement during the early years of the loan.

With the equal payment plan, there is a flat payment each period, but the proportion of the payment that is principal and interest varies over the term of the loan. The early payments made on the loan will include a large percentage of the interest payment and the later payments will include a greater share of the principal. Use amortization tables to compute the payments on an equal payment loan.

Example: Amortized loan decreasing payment plan. $15,000 for 10 years at 15 percent interest.

Year	Unpaid Principal	Principal[1] Payment	Interest[2]	Total Payment	Remaining Balance
1	15,000	1,500	2,250	3,750	13,500
2	13,500	1,500	2,025	3,525	12,000
3	12,000	1,500	1,800	3,300	10,500
4	10,500	1,500	1,575	3,075	9,000
5	9,000	1,500	1,350	2,850	7,500
6	7,500	1,500	1,125	2,625	6,000
7	6,000	1,500	900	2,400	4,500
8	4,500	1,500	675	2,175	3,000
9	3,000	1,500	450	1,950	1,500
10	1,500	1,500	225	1,725	0
Total	0	15,000	12,375	27,375	

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[1] Principal payment/year = $\frac{\text{total principal}}{\text{no. of years}}$

[2] Interest payment = unpaid principal at the beginning of the year x the interest rate

Example: Amortized loan--equal payment plan. $15,000 for 10 years at 15 percent interest.

Year	Principal & Interest[1] Payment
1	$ 2,988
2	2,988
↓	↓
10	2,989
Total	$29,888

---

[1] The principal and interest payment is determined by finding the factor from the amortization table on page 389 (in this case, .1992) and multiplying it by the amount of loan (in this case, $15,000) ($15,000 x .1992 = $2988).

Compensating Balances--In some cases, a borrower may be required to keep a certain proportion of a loan in a savings or checking account. This is often referred to as a compensating balance and the money contained therein is unavailable for use and the true APR will be greater than the quoted rate.

Production Credit Associations, Federal Land Bank Associations, and Banks for Cooperatives have something similar to compensating balances. PCAs and FLBAs require the borrower to purchase stock in the association in proportion to the amount borrowed. The banks for cooperatives require stock purchases based on the interest on the loan. The money to purchase the stocks is included in the loans but is not available for use by the borrower. However, the borrower may receive dividends on the stock purchase or compensating balance.

Example: Loan with stock purchase requirement. Assume an $8,000, 2-year loan which is to be repaid in two equal annual payments on the principal at the end of each year with a contractual interest rate of 13 percent, with a 5 percent stock purchase requirement. In order to get the loan, the person would have to borrow $8,000/.95 or $8,421 to cover the 5 percent stock requirement. Each annual principal payment will be $8,421/2 or $4,210.50. The interest payment each year would then be:

Year 1--$8,421.00 x .13 = $1,094.73
Year 2--$4,210.50 x .13 = 547.37

$1,642.10 total interest paid

The (APR) Annual Interest Rate could be calculated by using the same formula presented earlier for figuring add-on interest:

$$\frac{2 \times 1 \times 1{,}642.10}{8{,}000 \times (2+1)} = \frac{3{,}284.10}{24{,}000} = .1368 \text{ actual interest rate}$$

A quick approximation of the actual annual interest may be made as follows:

Annual interest rate = contractual rate x (1 + stock requirement)

In this example, it would be:

Annual interest rate = .13 x (1 + .05) = .1365

Interest After Taxes--It is important to remember that interest paid is a tax deductible expense. When figuring the cost of borrowing, the farmers tax rate should be considered. As an example, the after-tax interest rate for a farmer in the 30 percent tax bracket would only be 10.5 percent on a loan at 15 percent interest.

15% interest x 30% tax bracket = .045
15% - 4.5% = 10.5%

It is also important to note that in times of inflation, the interest paid or received on money may be diminished or even covered by the effect of the inflation. As an example, if you borrow $1,000 at 14 percent simple interest for a year when there is 10 percent inflation, you will owe $1,140 at the end of the year. But, since the dollars you repay with are worth 10 percent less than the dollars you borrowed because of inflation, you are really only paying back $1,026 (10% x $1,140 = $114, $1,140 -

$114 = $1,026). This simply means that you are repaying borrowed money with dollars that are worth less because of inflation.

Line-of-Credit--Some lenders offer line-of-credit financing. There are various versions of line-of-credit financing. The two most common approaches are (a) level line of credit and (b) the sinking line of credit.

With a level line of credit, a borrower can borrow, pay off part or all of the debt, and then reborrow again. The line is replenishing. The borrower does not have to apply for a new loan each time money is needed. The credit line is drawn upon (up to a ceiling amount) as cash is needed and payments are made as income is available. This is sometimes referred to as revolving credit. Many banks and PCAs offer this option with short term credit. One big advantage of a borrower operating on a line of credit is that borrowing and repaying are easy and quick to do and a farmer is more likely to keep excess unused funds low; therefore, keeping a higher percentage of money in use. Another advantage of a line of credit is that you have money available to use for making a purchase when you don't have time to talk to your lender. To establish a level line of credit, a borrower generally sits down with the lender at least once per year and together they evaluate the financial position of the borrower and set a comfortable upper limit as ceiling for the line of credit.

A sinking line of credit is similar in that the borrower and lender meet in advance and establish a ceiling or limit that the borrower can draw upon at a selected time. The difference is that the line is not replenishing. The main advantage here is that the borrower can get a commitment on the amount available.

Cash flow planning is a must for anyone acquiring line of credit financing. Line of credit financing forces the borrower to look ahead.

Leverage--Using someone elses money along with your own gives you leverage. If a farmer can earn a net profit on borrowed capital, it stands to reason that a higher return is being earned on personal capital.

As an example, assume that you are able to get a return on an investment of 20 percent per year. You have $20,000 equity capital of your own to invest. This $20,000 investment would yield a return of $4,000 for the year. However, if you could borrow $20,000 additional dollars to invest at 15 percent interest you could gain a 5 percent return of $1,000 which, when added to the $4,000 return on equity capital, would yield a total return of 25 percent per year on your original investment. On the other hand, if things went sour and the investment returned only 12 percent, the resulting loss would be larger than if using only your own money.

When the economy is good, particularly in times of inflation, it pays to be highly leveraged (large percent borrowed capital as compared to equity capital); but, when the economy is in recession, those who are highly leveraged suffer first.

Variable or Floating Interest Rate--The use of variable or floating interest rates on all types of loans in becoming increasingly popular because of the wide and rapid fluctuations in interest rates. Most loans are re-evaluated at regular intervals and the interest rate is adjusted to the current level.

Annual Payment per $1 of Loan At Given Interest Rates and Maturities (Amortization Table)

Year	4%	5%	6%	7%	8%	9%	10%	11%	12%	13%	14%	15%	16%	17%	18%	19%	20%
1	1 0400	1 0500	1 0600	1 0700	1 0800	1 0900	1 1000	1.1100	1 1200	1.1300	1.1400	1.1500	1 1600	1 1700	1 1800	1.1900	1 2000
2	5301	5378	5454	5530	5607	5684	5761	5839	.5916	.5994	6072	.6151	.6229	6308	6387	.6466	6545
3	3603	3672	3741	3810	3880	.3950	4021	4092	4163	4235	.4307	.4379	4452	.4525	.4599	.4673	4747
4	2754	2820	2885	2952	3019	3086	3154	3223	3292	.3361	.3432	.3502	.3573	.3645	3717	3789	.3862
5	2246	2309	2373	2438	2504	2570	2637	2705	2774	.2843	2912	2983	.3054	.3125	.3197	.3270	.3343
6	1907	1970	2033	2097	2163	2229	2296	2363	.2432	.2501	2571	.2642	.2713	.2786	2859	.2932	.3007
7	1666	1728	1791	1855	1920	1986	2054	2122	.2191	.2261	2331	2403	2476	.2549	.2623	.2698	.2774
8	1485	1547	1610	1674	1740	.1806	1874	.1943	2013	.2083	.2155	.2228	2302	2376	.2452	.2528	.2606
9	1344	1406	1470	1534	1600	1667	1736	.1806	.1876	.1948	.2021	2095	.2170	.2246	.2323	.2401	.2480
10	1232	1295	1358	1423	1490	1558	1627	.1698	.1769	1842	1917	.1992	2069	2146	2225	.2304	.2385
11	1141	1203	1267	1333	1400	1469	1539	1611	1684	1758	1833	1910	.1988	2067	2147	.2228	.2311
12	1065	1128	1192	1259	1326	1396	1467	1540	1614	1689	.1766	.1844	.1924	2004	2086	.2168	.2252
13	1001	1064	1129	1196	1265	1335	1407	1481	.1556	.1633	.1711	.1791	.1871	1953	2036	.2121	2206
14	0946	1010	1075	1143	1212	1284	1357	1432	1508	1586	1666	1746	.1828	.1912	1996	.2082	2168
15	0899	0963	1029	1097	1168	1240	.1314	1390	1468	1547	1628	1710	1793	.1878	1964	.2050	2138
16	0858	0922	0989	1058	1129	1203	.1278	1355	1433	1514	.1596	1679	1764	.1850	1937	.2025	2114
17	0821	0886	0954	1024	1096	1170	1246	1324	1404	1486	.1569	1653	1739	1826	.1914	.2004	2094
18	0789	0855	0923	0994	1067	1142	1219	1298	1379	1462	1546	.1631	1718	.1807	.1896	.1986	2078
19	0761	0827	0896	0967	1041	1117	1195	1275	1357	1441	1526	.1613	1701	1790	1881	.1972	2064
20	0735	0802	0871	0943	1018	1095	1174	1255	1338	1423	1509	1597	1686	1776	1862	1960	2053
25	0640	0709	0782	0858	0936	1018	1101	1187	1275	1364	1454	1546	1640	1734	1829	.1924	2021
30	0578	0650	0726	0805	0888	0973	1060	1150	1241	1334	1428	1523	1618	.1715	1812	1910	2008
35	0535	0610	0689	0772	0858	0946	1036	1129	1223	1318	1414	1511	1608	1707	1805	1904	2003
40	0505	0583	0664	0750	0838	0929	1022	1117	1213	1309	1407	1505	1604	1703	1802	1901	2001

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

I. Lesson 7: Planning Partial Budgets Using Packout Records

A. Review

The previous lesson, Utilizing Farm Credit should be reviewed. Some conclusions from the previous lesson include:

1. Credit is an essential and increasingly important resource to most orchard operations.
2. Production loans and merchant/warehouse accounts are often used to help finance annual operations.
3. Short term credit is often set up on a line of credit basis.
4. Intermediate loans are used toward the purchase of depreciable investments such as machinery, equipment, trees and irrigation systems.
5. Long term credit is used for real estate purchases such as orchards, buildings and new plantings or replantings of orchards.
6. Credit needs should be planned well in advance of the time when the funds are required.
7. Having your "financial ducks in a row" is important in presenting loan packages to lenders. This means having up-to-date records, cash flow projections, financial statements and profit and loss statements.
8. Lenders base their decisions whether to grant a loan or not on: the individual, the financial health of the operation, the purpose of the loan, the ability to repay and the security or collateral available.
9. Borrowers should evaluate lenders based on five considerations; 1) lending policies, 2) available terms, 3) financial knowledge, 4) performance and dependability of the institution and 5) the lender's knowledge of agriculture.
10. Interest may be expressed in many ways and it is important for borrowers to know the real cost of credit or APR.

B. Objective

Using partial budgets to determine the profitability of changes within the orchard operation.

C. Motivation

often times prospective changes in the orchard operation affect a change in a limited number of receipt and expenditure items. In such instances full cash flow budgets needn't be used. Special partial budgets will work well at looking only at the variables affected.

D. Key Questions

1. What is a partial budget?
2. What are the guidelines for developing a partial budget?
3. How can packout records be used in partial budgeting for proposed production changes?
4. How can the distribution of grades affect financial returns?
5. How can the distribution of size affect financial returns?
6. How can packout information be combined with production cost records to evaluate net returns?
7. How can computers be used to plan partial budgets?

E. Introduction of Information

1. What is a partial budget?
   a. Partial budgets are a simple but useful method for testing changes in procedures in the orchard operation.
      1) Partial budgeting simplifies budgeting techniques by analyzing only the costs and returns influenced by the change. In other words it eliminates the consideration of extraneous variables.
      2) Partial budgets should look at both the profitability and feasibility (repayment of the proposed change).
      3) Many times partial budgets look only at variable costs because it is assumed that fixed costs would be payed regardless of what variable is chosen.
         a) However some fixed costs would be analyzed in partial budgeting.

b) Such fixed costs as interest on operating capital (as influenced by the change) may need to be taken into consideration.

4) The accuracy of partial budget analysis is only as good as the data used to determine it.

a) Sources of this information would include historic records, extension publications and grower's clearing house yellow sheets.

b) Individuals who can aid in obtaining information to be used in partial budgets include fieldmen and county extension specialists.

b. Partial budgets are useful in analyzing most short term changes in the orchard operation. Some examples include:

1) Machinery purchases.

2) Changing from handline to solid set irrigation.

3) Analyzing returns to the cost of summer pruning

4) Choosing alternate chemicals for best control.

5) Determining the returns to the cost of frost control protection.

6) Choosing the best use of manager's time.

2. What are the guidelines for developing a partial budget?

Use TM/HO-II/7/1 and examples on TM/HO-II/7/2 to demonstrate how partial budgets are set up.

a. Ask enrollees how often they have "put the pencil" to proposed changes in their operation. Explain that in doing so they have been doing a partial budget.

b. The steps involved in completing a partial budget are as follows:

1) First briefly describe both alternatives. One of the alternatives will probably be the practice which is currently being used.

2) Next estimate and record the anticipated annual returns from the proposed change.

3) Third add together all additional costs realized from the change.

4) Next estimate the reduced annual costs from the change.

    a) This value will be equal to all costs specific to the current practice.

    b) This information can be obtained from the record book.

5) The increase in receipts associated with the change plus the reduced costs add up to the credits of the proposed change.

6) Now the receipts lost in the change is determined. This is equal to the receipts realized in the current practice and is obtained from current year's receipts and estimated returns from the stored crop inventory.

7) Next the additional annual costs associated or specific to the proposed change are estimated and recorded on the partial budget.

8) The reduced receipts plus the increased cost is equal to the debits of the proposed change.

9) The total credits minus the total debts will yield the change in net income. If this figure is positive the proposed change is profitable.

10) The next step is often overlooked and in some proposed changes is as vital to partial budgets as the profitability. That is to determine the feasibility.

    a) First it must be determined if operating capital needs (which might increase) can be met. In other words can you cover the debt (if one is incurred) of the proposed change.

    b) Next is there enough owner management and labor to cover any net increases associated with the proposed practice.

    c) Have enrollees work through the example on TM/HO-I/7/3 on their own then go over the correct response.

3. How can packout records be used in partial budgeting for proposed production changes?

   Information for this section is based on Washington State University Extension Bulletin 1217, Using Packout Records to Evaluate Your Orchard's Financial Performance. This bulletin should be made available to enrollees as an aid in understanding information presented.

   a. As discussed in Unit I lesson 8 most packout records provide a very complete analysis of returns from crop sales. This information includes:

      1) Physical characteristics of the fruit including;

         a) Volume of fruit - This figure will be given in a variety of units and the number of pounds in these units should be known.

         b) Grade of fruit.

         c) Size of distribution of fresh fruit.

      2) Financial information relating to this physical breakdown is given as well. This information includes;

         a) F.O.B. prices for each grade and size.

         b) Packinghouse and industry charges.

         c) Packinghouse door returns or grower returns which are equal to the F.O.B. price minus packinghouse and industry changes.

      3) Additionally a cullage analysis is given by many sheds and this analysis can prove very helpful in pinpointing what production factors need to be changed in partial budgeting.

   b. Combining the returns analysis from packinghouses with records of expenditures and other expense information can be an invaluable tool in obtaining information for partial budgets.

4. How can the distribution of grade affect returns from crop sales?

   Use TM/HO-II/7/3,4,5 to demonstrate the effect grade of fruit can have on returns.

a. In estimating the returns anticipated from a change in production practices using yield changes exclusively to calculate receipts will result in a poor estimate.

   1) Yield changes alone are generally misleading.

   2) These anticipated yield changes must be coupled with changes in grade and size for accurate analysis.

b. Grade of fruit is the key determinant of grower returns for all commodities. Factors which determine the grade of fruit are shape, color and finish.

c. Cullage has the most pronounced effect on fruit returns with returns from various fresh grades being quite different.

d. The price difference between fresh and processed fruit is substantial. Often the effect of cullage on grower returns is one of the most important factors in packout analysis.

   1) Many sheds provide cullage analysis which is a breakdown of the causes of the cullage.

      a) This information is invaluable in determining production alternatives to increase returns.

      b) If this information is not included in your shed's packout visual observations of potential cullage problems at harvest should be recorded.

   2) TM/HO-II/7/3 gives some industry standards of expected cullage for apples.

   3) TM/HO-II/7/4 gives an example of the relationship between cullage and returns on Red Delicious apples.

      a) These figures are based on a yield of 1,000 field boxes per acre.

      b) Block A has 10% cullage and yields 750 packed boxes per acre. Block B has 30% cullage and 583 packed boxes per acre.

c) Interestingly enough each of these 2 blocks have the same packout of 75% Extra Fancy, 25% Fancy.

c. Using February prices from 1985 a dollar value for each of these two alternatives is calculated. It is found that block A returns more dollars per acre than block B.

1) Charges were calculated at $20/bin in charge and $3.22 per packed box.

2) An average dollar value for the cullage percentage can be calculated using this information.

a) This is done by dividing the difference in returns by the difference in cullage percentage.

b) The figure gives a cullage rate of return of $33 per acre for each percentage point reduction in cullage.

c) That is a considerable amount of money to improve production practices aimed at reducing cullage.

d. The principle of diminishing physical returns should be kept in mind here. For example, attempts at bringing cullage down below 10% on Red Delicious apples might get very costly as the effect of any cultural practice will probably become increasingly less effective. Or in other words you'll get less and less for your 33 bucks worth.

e. The effect of distribution of fresh market grades can be just as important as cullage in its effect on returns.

1) TM/HO-II/7/5 is an example of 2 blocks of Red Delicious apples and returns to those blocks based on fresh market grades.

2) Based on percent packout 2/3 of block A's fruit grades out extra Fancy where as 90% of block B's fruit is in the extra fancy grade. Both blocks have the same cullage.

3) Grower returns per acre are listed on the handout and are based on prices in February 1985. These returns have handling and packing costs deducted. Size distribution is assumed constant at 100's.

4) As can be seen, block A has an additional return per acre of dollar over the return per acre for block B.

    5) Dividing this dollar amount by 21 (the difference in Extra Fancy production) gives an average dollar value return per acre for each additional percent of the crop that is extra fancy.

    6) Once again this is the amount of money a grower could spend to improve production practices to "bump" more apples into the Extra Fancy grade and not loose money.

5. How can the distribution of size effect crop receipts?

   Use TM/HO-II/7/6 to demonstrate how size distribution might effect the returns from crop sales.

   a. The size distribution of packed fruit can be a little more complicated to account for but has an effect on grower returns none the less.

   b. In speaking of size, growers generally aim for peak size and a distribution of crop throughout the remaining sizes.

   c. Though aiming for the largest size will generally not return the best prices avoiding the smallest sizes can be very important. When looking at size growers should aim for an economic distribution.

   d. TM/HO-II/7/6 is an example of the grower return relationship between three different size distributions.

      1) In this example the yield and fresh packout is held constant.

      2) Each distribution in this example peaks on a different size.

         a) Block A peaks on size 125 and 69% of the fruit is below 113's.

         b) Block B peaks on 100's with 67% of the fruit smaller than 113's.

         c) Block C peaks on 100's and __% of the fruit is smaller than 113's.

3) Each block yields 1000 field boxes per acre.

   a) 10% of the fruit is culled.

   b) The percent packout of each example is 75% Extra Fancy and 25% Fancy.

4) The prices shown are based on Feb. 1985 Grower's Clearing House yellow sheets and weighted to reflect grade effect.

   a) Weighted Price = [0.75 x Extra Fancy Price] + [0.25 x Fancy Price].

   b) This is based on the percent packout of 75% and 25%.

5) In this example the changes are the same at each yield level.

6) As can be seen the returns for peaking at different size distributions are quite variable with the returns for block A being dollars higher than the returns to block B and dollars more than the returns to C.

6. How can packout information be combined with production cost records to evaluate net returns for proposed changes.

Use TM/HO-II/7/2 and examples on TM/HO-II/7/7 to demonstrate how packout information and enrollees records of expenditures can be used to budget proposed changes. These examples are based mainly on improvements in grade.

a. In each of the examples on an orchardist is wishing to improve his packout and lower his percent of cullage to an optimum level from the current year's level.

b. His first step is to determine the change in receipts and costs estimated from this change. He goes to his packout record for the previous year (or years) and uses it to set up the receipts on the partial budget as follows:

   1) The first step is to select the suggested guidelines for the variety on the packout.

   2) Next, convert the volume of fruit covered by the packout record to pounds.

3) Third is to calculate F.O.B. returns by grade and returns per pound of culls.

   a) The average price for this information should be based on the average price received in the year you are comparing to. If last year was a relatively normal year.

   b) If the previous year's prices were highly unusual receipts for the proposed change can be determined based on average prices in the most recent normal year or a 5 year average of prices in the past 5 years.

   c) These calculations will be equal to:

      1) Price/pound grade (X) =
      value of all (x1) fruit
      # of lbs. of (x1) fruit

      2) This equation is calculated for each grade.

      3) Cull price per pound =
      Total value of culls
      pounds of culls

4) Warehouse and industry changes must then be determined.

   a) This information will vary from warehouse to warehouse.

   b) In-charges and storage assessments may be based on the amount of fruit received.

   c) Determine the charges based on incoming fruit, then calculate the rest of the charges on a packed box basis.

   d) Most records will list these charges on a per pack basis. The sum of these individual per pack charges is adequate. If the record only shows totals then the total charge must be divided by the total number of packed boxes.

5) Take the prices determined in step 3 and multiply these times the number of pounds of the different grades and culls and enter on the incoming receipts.

6) Enter the receipts lost because of the proposed change by simply entering gross receipts. (Unless prices used to calculate returns received were different.)

c. Now enter the changes in expenses that are known to occur at this point.

   1) Enter the total packing charges for the previous year under costs saved on the credit section.

   2) Calculate the packing charges for the proposed change by multiplying the total number of packed boxes by the total per pack charge, calculated in step 4.

      a) Calculate the charges for fruit delivered.

      b) Enter these figures on the debit section under additional expenses incurred.

   3) From this information an idea of the maximum that could be spent to achieve the proposed packout can be determined.

      a) Add the total of A to the total of B.

      b) Add the total of D to the total of E.

      c) Subtract C from F which results in the net change in income. This reflects the maximum which can be spent to achieve the proposed change to break even.

   4) The following "what if" situations from the example handout TM/HO-II/7/ can be used to demonstrate how to incorporate cost information into the partial budget.

      a) In this a grower with the aid of his fieldman determines additional money spent on pruning will achieve the desired packout.

      b) He wants $20 more per acre for returns to his management and wants to know what additionally he would have available for pruning costs.

7. How can computers be used to plan partial budgets?

Use the Packout Analysis Template for Lotus 1-2-3 to demonstrate to enrollees the use of computers in what-if analysis of partial budgets. Have enrollees use the Packout analysis template for analysis of some examples their operation.

a. Explain to enrollees that just as the case of cash flow projection electronic spreadsheets can be very helpful in partial budgeting of proposed changes.

b. Explain and demonstrate the use of the Program. Explain the principle or formula behind this template is very much the same as the handwritten version used early but this allows many possibilities to be examined in a shorter time.

F. Group Discussion

Allow time to discuss any problems encountered by enrollees in the ideas and concepts presented in this lesson. Encourage a discussion of other examples of production changes partial budgets could be used to examine. Announce that you will be bringing along the computer and Packout Analysis template on the next orchard visit and would be glad to help enrollees analyze any proposed changes they wish to project.

G. Conclusions

1. Partial budgets are simplified analysis which looks only at specific changes in returns and costs of a proposed change.

2. For partial budgets to be completed both the profitability and feasibility of a proposed change must be analyzed.

3. The accuracy of partial budgets are only as good as the data used on the analysis.

4. In a partial budget the sum of additional annual receipts (realized from a change) plus the reduced annual costs (cost of the alternate practice) is equal to the Credits associated with the change.

5. The reduced annual receipts (returns from the alternate practice) plus the additional annual cost (cost of the proposed practice) equals the Debits associated with the change.

6. The Net Change Income of the proposed change is then equal to the Credits minus the Debits.

7. If the Net Change in Income is positive the proposed change is profitable.

8. Capital requirements and managers time and labor should be used to help analyze if a profitable change is feasible.

9. Much of the information for returns generated by a cultural change is readily available on packout records.

10. Packout records are very good for analyzing the effect of grade and cullage on returns and determining if proposed changes to improve grades are profitable.

11. Packout records are also useful in determining size distribution effect on returns.

12. Packout records along with cost recorded in the record book can help analyze the profitability of many proposed changes in cultural practices.

13. Electronic spreadsheets such as the packout analysis template are very quick and efficient in planning partial budgets.

H. Orchard Visit

The majority of the time for orchard visits should be spent helping enrollees analyze any proposed changes in production practices in the upcoming season. This should be done on paper as well as with the computer. Look at orchardists past packout records and discuss some areas of their packout which could be improved and proposed ways of accomplishing this. Have them discuss these ideas and budgets with their fieldman.

I. Materials Needed

Instructor/Enrollees

TM/HO-II/7/1	Partial Budget Form
TM/HO-II/7/2	Examples for Partial Budgeting
TM/HO-II/7/3	Suggested Guidelines of the Grade and Packout for Apple Cultivars.
TM/HO-II/7/4	Example of Cullage Effect on Returns
TM/HO-II/7/5	Example of Grade's Effect on Returns
TM/HO-II/7/6	Example of Size Distribution on Returns
TM/HO-II/7/7	Examples for Partial Budgeting with Packout Records

WSU Cooperative Extension Bulletin 1217, Using Packout Records to Evaluate the Orchard's Financial Performance

WSU Cooperative Extension Packout Analysis Template for Lotus 1-2-3

IBM/IBM Compatible Computer (minimum 640K RAM, 10 meg. hard disk)

TM/HO-II/7/1

PARTIAL BUDGET FORM

PROPOSED CHANGE:

CREDIT		DEBIT	
ADDED RETURNS FROM CHANGE		REDUCED INCOME FROM CHANGE	
TOTAL ADDED INCOME		TOTAL REDUCED INCOME	
REDUCED COSTS		ADDED COSTS	
TOTAL REDUCED COSTS		TOTAL ADDED COSTS	
TOTAL CREDITS		TOTAL DEBITS	

CHANGE IN INCOME =

FEASIBILITY

TOTAL ADDED INVESTMENT

INTEREST CHARGE

ANNUAL INTEREST AND PRINCIPLE PAYMENT

TM-II/7/3

SUGGESTED GUIDELINES OF THE GRADE AND THE PACKOUT

FOR APPLE CULTIVARS

CULTIVAR	% OF PACKED BOXES			% OF TOTAL PRODUCTION				INTERPRETATION
	XF	F	C	XF	F	C	CULLS	
SUPER RED COLOR SPORTS	65	35	--	58	32	--	10	LOW % OF XF WITH AN EXCESS % OF F & CULLS
	80	20	--	76	19	--	5	DESIRED LEVEL OF XF,F,& CULL FOR MAX. PROD.
	90	10	--	85	10	--	5	INDICATES OVER EMPHASIS ON FRT. COLOR PROB. LOSS OF FRUIT SIZE & PRODUCTIVITY
STANDARD RED CULTIVARS	55	45	--	47	38	--	15	LOW LEVELS OF XF AND EXCESS LEVELS OF CULL
	65	35	--	59	31	--	10	MORE ADEQUATE BALANCE BETW. COLOR & PROD.
	75	25	--	71	24	--	5	INDICATES OVER EMPHASIS ON FRT. COLOR PROB. LOSS OF FRUIT SIZE & PRODUCTIVITY
GOLDEN DELICIOUS	45	40	15	35	30	11	25	EXCESS. DOWN GRADING OF FRT HIGH LEVEL OF C GRADE FRUIT.
	55	35	10	47	30	8	15	COMMON PACKOUT EXCESS AMT OF LOW GRADE AND CULLS
	65	30	5	62	28	5	5	GOOD PACKOUT 10% CULLAGE
	75	25	0	71	24	0	5	PRODUCTION FOR PACKOUT

TM/HO-II/7/4

RELATIONSHIP OF PACKOUT, CULLAGE, AND RETURNS

		BLOCK A		BLOCK B
XF @ $8.89/PACK				
	563 PACKS =	$5,005.07	438 PACKS =	$3,893.82
F @ $6.89/PACK				
	187 PACKS =	$1,288.43	145 PACKS =	$ 999.05
CULLS @ $ .03/LB				
	3,500 LBS =	$ 105.00	10,000 LBS =	$ 315.00
TOTAL FOB RETURNS		$6,398.50		$5,207.87

PACKING COST

		BLOCK A		BLOCK B
$20/BIN + $3.22/PACKED BOX =		$3,215.00		$2,677.26

GROWER RECEIPTS

		BLOCK A		BLOCK B
		$3,183.50		$2,530.61

TM/HO-II/7/5

EFFECTS OF DISTRIBUTION BETWEEN GRADES

	PERCENT PACKED BOXES		PERCENT OF PRODUCTION	
	BLOCK A	BLOCK B	BLOCK A	BLOCK B
EF	67	90	60	81
FANCY	33	10	30	9
CULLS			10	10
TOTAL	100	100	100	100

AVERAGE FOB PRICE/PACKED BOX	$8.60	$9.09
CULLS $/TON	$60.00	$60.00

NET RECEIPTS

YIELD FIELD BOXES	BLOCK A	BLOCK B	DIFFERENCE
750	$2,507	$2,784	$ 277
1000	$3,340	$3,708	$ 368
1250	$4,178	$4,637	$ 469

VALUE PER PERCENTAGE POINT RANGES FROM $13 TO $22

TM/HO-II/7/6

SIZE DISTRIBUTION AND PRICE

FRUIT SIZE	BLOCK A	BLOCK B	BLOCK C	WEIGHTED PRICE
2'S/LGR		2.0	3.4	8.75
80/88	5.1	13.5	19.3	10.71
100	9.1	16.8	22.4	9.66
113	16.1	21.0	20.6	8.84
125	25.3	16.1	15.4	8.29
138	24.0	16.5	9.8	8.10
150'S/SM	20.3	14.1	9.1	6.95

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

II. Lesson 8: Determining the Economic Feasibility of Replanting Orchards

A. Review

The previous lesson, Planning Partial Budgets, should be reviewed. Conclusions from the previous lesson include:

1. Partial budgets are simplified analysis which looks only at specific returns and costs of a proposed change.
2. For partial budgets to be completed both the profitability and feasibility of a proposed change must be analyzed.
3. The accuracy of partial budgets are only as good as the data used in the analysis.
4. In a partial budget the sum of additional annual receipts (realized from a change) plus the reduced annual costs (cost of the alternate practice) is equal to the Credits associated with the change.
5. The reduced annual receipts (returns from the alternate practice) plus the additional annual cost (cost of the proposed practice) equals the Debits associated with the change.
6. The Net Change Income of the proposed change is then equal to the Credits minus the Debits.
7. If the Net Change in Income is positive the proposed change is profitable.
8. Capital requirements and managers time and labor should be used to help analyze if a profitable change is feasible.
9. Much of the information for returns generated by a cultural change is readily available on packout records.
10. Packout records are very good for analyzing the effect of grade and cullage on returns and determining if proposed changes to improve grades are profitable.
11. Packout records are also useful in determining size distribution effect on returns.

12. Packout records along with costs recorded in the record book can help analyze the profitability of many proposed changes in cultural practices.
13. Electronic spreadsheets such as the Packout Analysis Template are very quick and efficient in planning partial budgets.

B. Objective

To analyze the economics of replanting orchards.

C. Motivation

1. Ask enrollees how many foresee a substantial decline in production from their orchards due to the advanced age of their trees over the next 10 years.
2. Explain that they are not alone as many of Washington's existing fruit trees need to be replaced over the next 10 years. The high percentage of trees in this age range resulted from plantings after the killing winter of 68'.
3. Now ask enrollees if the can "afford" to replant these trees. Many agricultural lenders are currently not lending money to establish orchards simply because the investment does not flow at today's interest rates, planting costs, and older orchard systems.
4. Finally ask those enrollees who's orchards will need replacement if they will be ready for a new career when their trees decline.

D. Key Questions

1. Why must orchardists think about replanting their orchards?
2. What are some alternatives and current trends in planting systems?
3. Where can information used to estimate returns for various orchard planting systems be obtained?
4. How can computers be used to analyze the economic feasibility of orchard planting systems?

E. Introduction of Information

1. Why must orchardists include replant of their orchard in their long range economic plans?

a. As discussed in lesson 6 of Unit I, Developing a Tree Capitalization and Depreciation Schedule for Orchard Trees, the value of orchard trees is not static.

  1) Over the life of trees in an orchard the value will first increase then level off over a number of years and finally decline to a point where the trees no longer do their job. That job being "to make you a profit".

  2) The value of the tree should parallel the trees productive ability.

b. The depreciation of a fruit tree, like the depreciation of any capital asset, results from the wear and tear and/or obsolescence of the asset.

  1) With fruit trees the "wear and tear" could be thought of as the decline in production due to age.

  2) Trees may also depreciate because of obsolescence of the variety. As an example the depreciation in the value of Starking trees due to obsolescence of it as a desirable, marketable, fruit.

c. Orchardists need to appreciate the fact that depreciation of their trees is an expense to their operation.

  1) That expense represents what they should be investing to help replace that asset.

  2) Often times in practice the money for this expense is seen as additional profit.

  3) This does not create problems in the short run but can be lethal to the operation over the long haul.

d. Many orchardists find it easy to understand why assets such as tractors, sprayers, and picking bags must be replaced in a timely fashion. Yet they routinely wait until their trees are nearly worthless to attempt to replace their most valuable capital asset!

e. Forward planning for the replacement of your ever, declining orchard is essential and the question is not, "can, I afford to replace my declining orchard", but, "what is the best economic plan to maintain my level of production over the long run?"

2. What are some alternatives and current trends in planting systems?

a. There are many alternatives orchardists can use in their replanting plans for their orchard. It is important to study the financial, cultural, and management implications of any plan to determine if it will work in your situation.

b. Generally in today's economic climate it is important to choose systems which will bring trees into bearing as early as possible thus reducing costs associated with interest charges, lack of production, and the expense of capitalizing production expenses.

c. Some alternatives which should be examined include:

    1) Interplanting into established orchards.

        a) This method allows for income from established trees to come in while the younger planting is in its pre-productive stage.

        b) Lower capital requirements are generally needed reducing interest costs.

        c) Many of the fixed and variable costs will not be appreciably increased over those for the established block while the younger trees are in their pre-productive state.

        d) One major disadvantage of this system is the difficulty in getting young trees into production due to competition from older trees for light and water.

        e) Many cultural requirements are different for younger trees than they are for older trees.

        f) Often times it is harder to implement a comprehensive replant program.

        g) It may be difficult to adapt many of the new planting systems in the confines of a replant situation.

    2) High density systems managed for early production.

        a) Use of high density planting systems managed for early production are slowly increasing in use in Washington.

  - b) The major advantage of these systems is the early high production. Going into high production at 3-4 years as opposed to 7-10 years is very attractive.
  - c) Ease of operation may be an advantage with the elimination of ladder work for pruning and harvest.
  - d) The major disadvantage of these systems is the initially high capital investment and resulting problem of obtaining credit.
  - e) These systems also require a higher level of management.
  - f) Finally at this time these systems are not extensively tested commercially in North Central Washington.

3) Using a rotating system in which a percentage of the orchard is periodically replaced.

  - a) This method is seldom being used in North Central Washington but is an alternative orchardists must look at.
  - b) As an example a 30 year old orchardist purchases a 20 acre orchard with 25 year old trees. It is estimated there will be a substantial decline in production over the next 10 years. Possibly he should replant a 2 acre block in high density managed for early production.
  - c) The major advantage of this system is replenishment of the orchard in small possibly affordable increments.
  - d) Learning to manage smaller blocks of these systems could be easier than larger blocks.
  - e) The major disadvantage is the fact that pulling producing trees no matter how small the acreage is painful and the loss of income must be adjusted for in the business.

3. Where can information used to estimate returns and costs of various orchard replant alternatives be obtained.

  a. Extension publications, Goodfruit Grower articles, and Washington State Horticulture Association proceedings provide a valuable source of information on costs and returns of establishing orchards. HO-II/8/1 provides a list of some of these articles.

b. Extension personnel and warehouse fieldstaff can provide information for estimates as well as steer you to other orchardists using these practices.

c. Many meetings throughout the year include topics on new planting systems that could be helpful in estimating returns of various plantings.

4. How can computers be used to analyze the economic feasibility of orchard planting systems?

Demonstrate the Lotus 1-2-3 template on Orchard Replant from WSU Cooperative Extension on various orchard replant scenarios. After demonstrating the template have enrollees use the program to try some "what if" situations for replanting orchards.

F. Group Discussion

Allow time for enrollees to discuss various replant systems they have used or heard of and their effectiveness.

G. Conclusions

1. Most orchardists at some point in their careers will face the dilemma of when to replant an old orchard and how.
2. Trees are one of the most valuable assets an orchardist has and yet they are often overlooked as depreciable property until their production levels have drastically declined.
3. Depreciation can be thought to represent what should be invested to help replace the asset.
4. Interplanting is one method for replacement of a declining orchard that can reduce the overall pre-productive investment.
5. The major disadvantage of interplanting is getting young trees into production.
6. Another alternative to be examined when replanting orchard sites is the use of high density systems managed for early production.
7. The major disadvantage of these systems is the high initial capital investment.
8. The advantage of these systems is the early high production levels.

9. Orchardists may need to look to a plan of rotation whereby small portions of a declining orchard are slowly replaced.

H. Orchard Visit

In visits following this lesson look over enrollees orchard map and inventory and discuss any replant plans they might have for the future. Bring along a portable computer and the Orchard Replant template to try out any plans they anticipate.

I. Materials Needed

Instructor/Enrollees

TM/HO-II/8/1	References List For Replant Calculations
TM/HO-II/8/2	Using the Lotus 1-2-3 Replant Template

WSU Cooperative Extension Replant Template

IBM Compatible Computer; 640K, 20 megabyte harddisk

Lotus 1-2-3

TM/HO-II/8/1

REFERENCE LIST FOR INFORMATION ON COSTS AND RETURNS OF PLANTING SYSTEMS

WSU COOPERATIVE EXTENSION BULLETINS

EB0960	COST OF ESTABLISHING AN APPLE ORCHARD, COLUMBIA BASIN
EB1159	ESTIMATED COST OF PRODUCING RED DELICIOUS APPLES, COLUMBIA BASIN
EB1312	COST OF ESTABLISHING A JONAGOLD OR GALA APPLE ORCHARD
EB1428	COST OF REPLANTING AN APPLE ORCHARD BY WHOLE BLOCK REMOVAL, YAKIMA VALLEY
EB2834	COST OF ESTABLISHING APPLE ORCHARD ON FULL DWARFING ROOTSTOCK
EB1352	COST OF ESTABLISHING A PEAR ORCHARD BY INTERPLANTING, WENATCHEE VALLEY
EB1374	COST OF PRODUCING PEARS IN THE WENATCHEE RIVER VALLEY
EB1222	ESTIMATED COSTS OF PRODUCING SWEEET CHERRIES IN CENTRAL WASHINGTON
EM4563	ESTABLISHMENT AND PRODUCTION COSTS OF A 40 ACRE PEACH ORCHARD

GOODFRUIT GROWER ARTICLES

1. COST OF ESTABLISHMENT OF AN APPLE ORCHARD IN THE COLUMBIA BASIN. MARCH 1,1986. P. 36.
2. APPLE TRAINING SYSTEMS. JULY 15, 1986. P. 15.
3. AXE INTENSIVE SYSTEM, TREE TRAINING IN NEW ZEALAND. APRIL 1, 1986. P. 22.
4. AXE INTENSIVE TRAINING SYSTEM. DECEMBER 1, 1986. P. 55.
5. EUROPEAN TREE TRAINING PRACTICE. NOVEMBER 1,1986. P. 5.

REFERENCE LIST FOR INFORMATION ON COSTS AND RETURNS

OF PLANTING SYSTEMS CONTINUED

GOODFRUIT GROWER ARTICLES

6. TREE TRAINING IN EUROPE. DECEMBER1, 1986. P. 88.
7. GALA ON AXE INTENSIVE TRAINING SYSTEMS. APRIL 1, 1986. P. 22.
8. GALA ON TATURA TRELLIS SYSTEM. SEPTEMBER 1, 1986. P. 5.
9. GRANNY SMITH AND AXE INTENSIVE TRAINING SYSTEM. APRIL 1, 1986. P. 22.
10. RESEARCH ON HIGH DENSITY PLANTING OF APPLES. APRIL 15, 1986. P. 10.
11. ORCHARD RENEWAL AND INTERPLANTING. DECEMBER 1, 1986. P. 71.
12. ORCHARD RENEWAL AND INTERPLANTING. JANUARY 15, 1986. P. 27.
13. HIGH EARLY PRODUCTION AND JONAGOLDS. MARCH 15, 1986. P. 47.
14. TRAINING SYSTEM SELECTION AND ORCHARD RENEWAL. JANUARY 15, 1986. P. 27.
15. WHOLE BLOCK REMOVAL AND ORCHARD RENEWAL. JANUARY 15, 1986. P. 27.
16. WHOLE BLOCK REMOVAL AND ORCHARD RENEWAL. DECEMBER 1, 1986. P. 71.
17. HIGH DENSITIES OF PEARS. OCTOBER 1, 1986. P. 20.
18. ORCHARD RENEWAL IN YAKIMA VALLEY. DECEMBER 1, 1986. P. 77.
19. EARLY PEAR FRUITING IN EUROPE AND ROOTSTOCKS. OCTOBER 1, 1986. P. 20.
20. TREE TRAINING AND THE AXE INTENSIVE SYSTEM. APRIL 1, 1986. P. 22.

REFERENCE LIST FOR INFORMATION ON COSTS AND RETURNS OF PLANTING SYSTEMS CONTINUED

GOODFRUIT GROWER ARTICLES

21. TREE TRAINING AND ORCHARD REPLANT. JANUARY 15, 1986. P. 27.

22. TREE TRAINING INNOVATIONS IN RED DELICIOUS. SEPTEMBER 15, 1986. P. 24.

23. APPLE TREES, TRAINING OF. JANUARY 15, 1987. P. 18.

24. ORCHARD REPLANT AND MONO-AMMONIUM PHOSPHATE. OCTOBER 1, 1987. P. 5.

25. ECONOMICS OF ORCHARD RENEWAL. SEPTEMBER 15, 1987. P. 36.

WASHINGTON STATE HORTICULTURE ASSOCIATION PROCEEDINGS

1. SLENDER SPINDLE TRAINING IN THE NETHERLANDS. 1987. P. 93.

2. SYSTEMS IN WASHINGTON. 1987. P. 98.

3. PEAR TREE TRAINING. 1987. P. 200.

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

III. Lesson 9: Marketing Washington Fruit

A. Review

The previous lesson, Determining the Economic Feasibility of Replanting Orchards, should be reviewed. Conclusions from the previous lesson include:

1. Most orchardists at some point in their careers will face the dilemma of when to replant an old orchard and how.
2. Trees are one of the most valuable assets an orchardist has and yet they are often overlooked as depreciable property until their production levels have drastically declined.
3. Depreciation can be thought to represent what should be invested to help replace the asset.
4. Interplanting is one method for replacement of a declining orchard that can reduce the overall pre-productive investment.
5. The major disadvantage of interplanting is getting young trees into production.
6. Another alternative to be examined when replanting orchard sites is the use of high density systems managed for early production.
7. The major disadvantage of these systems is the high initial capital investment.
8. The advantage of these systems is the early high production levels.
9. Orchardists may need to look to a plan of rotation whereby small portions of a declining orchard are slowly replaced.

B. Objective

To improve understanding of how Washington fruits are marketed

C. Motivation

1. As enrollees what the 2 major goals of marketing fruit are. Write their ideas on the board or overhead.

2. Explain that the two major goals of marketing fruit are: 1) providing the consumer with "what they want" at the best possible price" and 2) "growers receiving the highest possible return for what they produce."

3. Often there must be a compromise between these two goals

4. Consumers have the ultimate influence on these to goals since the end product of all productive processes is consumption.

5. However producers have some ability in influencing consumer decision and a great deal of the success in the Washington Tree Fruit Industry has been the ability to establish an innovative and successful program on marketing their agricultural commodities.

D. Key Questions

1. What are some key marketing concepts that will help me understand Washington's Tree Fruit marketing?

2. How do market orders, market agreements, and promotional agencies help improve market strength for Washington growers?

3. How do warehouse cooperatives improve market strength for growers?

4. What are some of the market channels for Washington fruit?

5. What do buyers and sellers of Washington fruit look for in these commodities?

6. What can I do as an individual grower to improve the marketing of Washington fruit?

E. Introduction of Information

1. What are some key economic concepts that will help me understand the Washington Tree Fruit Industry?

   Use TM-II/9/1 to aid in discussing some basic marketing concepts.

   a. Marketing is, "the performance of all business activities involved in the flow of goods and services from the point of initial agricultural production until they are in the hands of the ultimate consumers".

1) Consumers exist all along the way of a marketing channel and are the firms engaged in doing various marketing tasks.

2) These consumers then become sellers and like you are interested in the profitability of their marketing function.

3) At the bottom of the marketing line is you the grower and at the top is the consumer. The consumer is the monarch or ruler of marketing activities.

4) Both buying and selling occurs throughout the marketing process and could be more properly thought of as a market/procurement process.

b. There are two market competition models which can help in understanding how the development of Washington marketing has helped growers improve their market strength. These two classifications are only models but many of the characteristics fit the Washington tree fruit industry.

1) Most orchardists, who are not directly marketing their product, would fit into the atomistic competitive model. The characteristics of this model include:

a) It involves pure competition.

b) Their product is viewed an homogenous.

c) There are many firms involved in producing the product.

d) It is easy for new producers to enter and exit.

e) Producers have little to no market strength.

f) Producers are "price takers" not "price makers".

2) The second competitive model is an oligopoly. This would more closely fit warehouses and the consolidation of grower under their commodity group. Characteristics of this model include:

a) Fewer firms resulting in less competition and greater market strength.

b) Products may be homogenous or differ. In the fruit industry products which compete are both like (apples to apples) or different (apples to oranges).

c) It is more difficult for new firms to enter and compete.

d) The increased market strength results from the ability to use marketing tools such as:

  (1) Brand names

  (2) Promotions

  (3) Product design

  (4) Packaging

  (5) Research and development

  (6) Standardization

e) These efforts push the product through to retailers as well as encourage the consumers to pull the product through to retailers. For example, "do you handle Washington apples?"

c. There are six functions performed in the market procurement channels. TM-II/9/2 These functions include:

1) Transportation

  a) One of the very costly functions in market procurement channels is transportation.

  b) This transportation from producer to consumer usually involves several methods and many stops along the way.

  c) This can cost as high as 14% of all marketing cost for fresh fruits and must be coordinated and performed at various steps in the market procurement channel.

2) Storage

  a) One of the great success stories in the Washington tree fruit industry is the ability to store a previously perishable crop ("sell it or smell it"). This storage capability allowed for crops to be marketed over a 9 month period and still retain much of their original quality.

   b) Storage for Washington fruits adds time utility to the value of the products.

3) Processing

   a) Processing adds form utility to Washington fruits.

   b) Processing includes everything, packing fruit to drying, freezing, or juicing fruit.

   c) Washington has gained strength in packing fruit in such a way as to make their market the world.

   d) Alternate uses of apples available due to advances in processing has enabled growers to use all the fruit they produce including culls and encourage new uses of fruit by consumers.

4) Buying and selling

   a) This is what many of us think of as the sole function of marketing.

   b) The flow of Washington fruits to consumers involves numerous selling and buying transactions. These transactions are performed throughout the market procurement channels.

   c) Often producers feel sellers do not "earn their keep" but in reality selling takes time, skills, and knowledge and use of these resources costs money.

5) Standardization and Market Intelligence

   a) In order that products move smoothly from one end of the country to the other, or for that matter from one end of the world to the other, there must be some basic understandings between buyers and sellers.

   b) Standards of quality, such as grade standards as well as quantity such as size and weight of containers are necessary.

   c) Buyers must be able to consistently expect what they are purchasing, often sight unseen.

   d) Intelligence gathering about commodities helps establish prices. It may also serve to help buyers and sellers locate each other in the marketing arena.

e) The federal government has a big hand in helping with these services.

6) Financing and Risk Bearing

a) Producers of agricultural products are not the only risk bearers along the marketing procurement chain.

b) As products move through the marketing chain agribusiness people must finance purchase of these products and bear the risk of financial catastrophes such as a sudden change in price as well as physical catastrophes such as commodity spoilage.

c. Principles of Supply and Demand

1) Demand is "the schedule of different quantities of a commodity that buyers will purchase at different prices at a fixed time and place". TM-II/9/3

a) Generally the lower the price the greater the demand and vice versa.

b) Demand may vary with consumers based on:

(1) Income

(2) Likes and dislikes

(3) The amount of the item the consumer previously purchased.

c) Demand represents the amounts of a product purchased at various prices, not necessarily what consumers need.

d) The demand curve slopes downward to the left.

e) Affects on consumers which can change consumer demand and shift the demand curve include:

(1) Changes in the number of buyers. These changes may occur from population growth or extending markets to new areas.

(2) Changes in income or purchasing power of consumers.

(3) Change in consumer taste for a product. Two contrasting examples of this for consumers is the viewpoint of apples as a health food versus the Alar scare.

(4) A change in the price of substitutable products, for example on increase or decrease in the price of oranges, will affect the demand for apples.

(5) A change in the expectation of future prices.

f) Generally the 2 most important changes influencing long run demand are changes in the income level and changes in the population.

2) Supply is "a schedule of differing quantities that will be offered for sale at different prices at a fixed time and place".TM-II/9/4

a) Generally the higher the price paid the more that will be offered for sale and vice versa.

b) Supply is the quantity price relationship for sellers.

c) The supply curve slopes upward and to the right.

d) Supply in the economic sense always represent the price quantity relationship..

e) Changes in supply include:

(1) In the short run factors influencing supply are costs of storage, storage availability, sellers need for cash, and the future outlook for the remainder of the season.

(2) Over the long run supply is affected by changes in the cost of production.

(a) As an example, the rising cost of labor.

(b) Along with this is competition with other commodities for resources will affect supply.

3) Both demand and supply are taken into consideration in determining prices.

a) The equilibrium price (where supply meets demand or demand meets supply depending on your viewpoint) is very allusive.

b) In reality prices are overshooting or undershooting the equilibrium point to find a price that will clear the market.

4) The elasticity of supply and demand is the relationship of the change in quantity to the change in price. TM-II/9/5, and 6

a) Generally speaking inelastic demand exists for items for which there are few substitutes and consumers are generally insensitive to price changes.

b) Elastic demand curves have substitutes and fruit growers products would fall into this group as consumers will generally be sensitive to price in purchasing fruit.

c) The more sloped the demand curve the more elastic the demand.

d) Supply elasticity bears a close relationship to time. Product supply becomes more elastic with time.

e) Supply of tree fruits is very inelastic as agricultural commodities go.

(1) The length of time required for increases or decreases in production is very long due to the productive life of fruit trees.

(2) Some tree fruit grower's such as citrus growers have used short run solutions to reduce supply such as mandatory crop disposal.

2. How do Market Orders, Marketing Agreements, and promotional agencies help improve market strength for Washington growers?

After presenting an overview of market agreement programs to enrollees bring in resource people to describe the specifics of these organizations for the various commodity groups.

a. Market Orders are formed to improve the marketing conditions for a crop. Their formation along with that of other marketing agreements has been one of the key strengths to Washington's tree fruit industry.

b. In essence the bonding together of atomistic growers, who as you remember have little market strength, into market orders or agreements create an oligopolistic organization. This oligopoly gains market strength by it's combined ability to regulate, research, promote, advertise, and generally unify production of a product.

c. Market Orders are issued under legislation passed by congress. The procedure includes:

  1) Submission of a proposed program by the industry concerned.

  2) Public hearings on the proposal at which all interested persons testify.

  3) The issuance of a recommended decision by the USDA with an opportunity given for interested persons to take exception.

  4) A vote by growers on the proposed market order which requires a 2/3 majority.

d. Once the market order is passed industry charges are mandatory by all growers.

e. Marketing Orders are tools which industries can use to organize to help themselves. The programs operate with a minimum of government supervision.

f. There is often some confusion over the terms marketing order, and marketing agreement. Market orders apply equally to everyone in the industry whereas market agreements are contracts between the parties signing them and the government and are binding only on those who sign them.

g. Generally market agreement programs for Washington fruits are a combination of market orders, market agreements, and promotional agencies.

h. Generally what market agreement programs can do includes the following:

  1) One of the most important things which can be done is regulation of quality. This is accomplished by specifying the grade, size, quality, or maturity of the product which may be shipped to market.

    a) This helps make available to large buyers the quantities of standardized quality they need.

b) This is also used by some industries as a means of establishing the cutoff point in industry supply reduction programs.

2) Regulation of quantity. Though not done in this industry some industries under market order do this to regulate supply and hopefully increase price.

3) Surplus pools. These are used mainly for non-perishable commodities such as dried fruits and nuts.

4) Regulation of containers. A regulation may be undertaken to fix the size, capacity, weight, dimension, or pack of containers. Industries use such regulations to standardize containers so that buyers and sellers can trade with confidence.

5) Research projects. Provisions may be made to undertake marketing research and development projects for the purpose of improving the marketing, distribution, and consumption of the commodities.

6) Advertisement and Promotion. This is one of the major pushes of most of the market agreement programs. It is designed to encourage retailers to buy and properly promote commodities concerned and to encourage consumers to "pull" these products through i.e. "do you carry Washington apples?"

3. How has the formation of cooperative warehouses helped improve market strength for Washington growers.

   a. A second tool Washington fruit growers have used very effectively in gaining market strength is through cooperative warehouse.

   b. Cooperative warehouses have allowed atomistic growers to band together and form more oligopolistic organizations.

   c. Cooperatives are simply special corporations that are owned by their patrons.

   d. Growers own a vested interest in their cooperative and control the cooperative by electing controlling boards and voting on major issues.

e. The Capper-Volstead Act of 1922 gives cooperatives certain protection against anti-trust laws. The act states "persons engaged in the production of agricultural products as farmers, planters, ranchmen, dairymen, nut or fruit growers", may form associations for marketing.

f. Most fruit grower cooperatives in Washington have special tax treatment under the tax codes.

  1) Tax treatment of cooperatives comes under subchapter T of the Internal Revenue Codes.

  2) Basically under this a cooperative that does 50% of its business with members it serves need not pay taxes if savings are distributed to members on the basis of patronage.

  3) At least 20% of patronage refunds must be paid in cash and the member must report for income tax all funds allocated to him whether cash or equity in the co-op.

g. Cooperatives use grower retains as the capital required for business improvement and growth.

h. The general advantages of cooperatives include:

  1) Pools together individual growers fruit so that large quantities of various commodities variety, size and quality, of fruit can be offered larger buyers.

  2) Pools together grower resources so specialists can be hired for packing and handling, marketing, and cultural advice.

  3) Pools together resources so specialized equipment for packing, handling, and storage can be purchased.

  4) Allows for an association which can gain market strength through advertising and promotion of their product.

i. Cooperatives will vary as to what market functions they perform.

4. What are the marketing procurement channels for Washington's tree fruits?

Use TM-II/9/7/7 to describe some of the marketing channels and combination of those channels used for Washington tree fruits. After a general description have representatives of various sheds discuss their marketing procurement channels they use for various commodities.

a. The marketing procurement channels vary greatly in length and complexity in the Washington tree fruit industry.

b. A marketing-procurement channel is made up of a sequence of firms through which a product moves. It involves both buying and selling.

c. As the product moves through the channel the functions of marketing are performed in various combinations each step of the way.

d. The combinations that are used along the market procurement channels are seemingly limitless. Generally each additional "middleperson" used along the way will do two things a) add value to your product and b) take an additional chunk of the ultimate consumer price paid.

e. Some possible market procurement channels are diagrammed on TM-II/9/7 and include the following:

  1) Channel A is direct sale from grower to consumer. It involves the uses of roadside stands.

    a) This channel works well for a small percentage of Washington growers but would not be effective for marketing the large volume of the industries commodities.

    b) In this channel all of the market functions are performed by the grower and his gross dollar value of the crop should be higher to offset additional expenses.

  2) Channel B is direct sale of fruit to retailers.

    a) This is done to some degree by larger growers who have the quality selection retailers desire.

    b) Growers must have packing, shipping and storage facilities available.

    c) Again growers in this instance perform all the marketing functions and should receive a higher gross return to make this endeavor profitable.

  3) Channel C would be similar to B with the grower selling to wholesale distributors.

4) Channel D would be similar to B and C with the grower using a broker (a selling agent who is paid to be a contact between seller and buyer) or in a few cases a jobber (who actually takes possession of the fruit).

5) Channel E and F are common routes for large quantities of Washington tree fruits.

    a) In both of these instances growers market their fruit through their warehouse which assembles and processes (grades, packs, and stores the fruit).

    b) The sheds then make use of F.O.B. sales agencies to market their fruit to wholesale or retail outlets.

    c) From here the fruit may either take Channel E or F with the difference being the use of brokers to act as an intermediary between the sales agency and wholesale or retail outlets.

    d) In most cases the vast majority of marketing functions are taken from the growers shoulders and passed to the warehouse sales agents and brokers:

6) Channels G and H are similar to E and F.

    a) Again these are common routes for Washington tree fruits.

    b) Growers market their fruits through the warehouse.

    c) In these two cases the warehouse are their own sales agency and market their products to wholesale and retail outlets.

    d) The difference between Channel B and Channel H is the use of brokers to bring the seller (shed) and buyer (wholesale and retail outlets) together.

7) Channel I is used to market some of Washington fruits locally.

    a) In this route the grower brings his fruit to the shed or warehouse and depends on them for marketing.

    b) The fruit is then sold locally to consumers from the shed or warehouse.

8) Channels J, K, and L are common channels for export sales of tree fruits and are becoming increasingly important in the marketing program of Washington's tree fruits.

   a) Growers again bring their product to the sheds and warehouses and depend on them to market their fruit.

   b) From here the sheds or warehouse use either sales agencies, act as their own sales agency to move the fruit to merchant exporters.

   c) A broker may or may not be used as an intermediary in this process.

   d) From their the produce moves to merchant exporters, importers to foreign processors in some cases and in other cases directly to retailers.

   e) The last route, as always, is to the consumer in foreign countries.

5. What do buyers and sellers look for in Washington tree fruits?

   Resource people will be the most effective at presenting current accurate information for this key question. Sales agency representatives for the various commodities as well as wholesale or retailer buyers should be lined up as resource people.

6. What can I as a grower do to influence the marketing of Washington tree fruits?

   a. The most important thing Washington fruit growers can do to keep the market for Washington tree fruit strong is to grow what consumers want.

      1) First and foremost that means go for growing top quality fruit.

      2) Second when looking to establishing new plantings study what varieties are in demand or projected to be in demand in the near future.

      3) Try to aim for the recommended size distribution.

      4) As discussed in lesson 8 these guidelines will also result in better grower returns in the short run.

b. The second thing growers can do is to keep informed and active on marketing issues.

   1) Attend shed meetings and keep current on their cultural suggestions.

   2) If in a cooperative become informed of voting issues and use your vote wisely.

   3) Keep abreast of the yearly programs of your commodities market agreement program.

Group Discussion

Allow sufficient time for enrollees to question guest speaker.

Orchard Visit

On orchard visits following this lesson address any questions the grower may have about the concepts presented in this lesson.

Conclusions

1. Marketing is "the performance of all business activities involved in the flow of goods and services from the point of production until they are in the hands of the ultimate consumer.

2. The six market functions are; 1) transportation, 2) storage, 3) processing 4) buying and selling, 5) market intelligence and standardization, and 6) financing and risk bearing.

3. Generally lower prices result in greater demand.

4. Generally higher prices result in more supply being offered.

5. Marketing agreement programs have helped growers gain market strength by improving market conditions for commodities.

6. Marketing agreement programs may include: regulation of quality, regulation of quantity, surplus pools, regulation of containers, research projects, and advertisement and promotion.

7. Cooperative warehouses have allowed atomistic growers to band together to form more oligopolistic organizations to market their fruit.

8. A market procurement channel is made up of a sequence of firms through which a product moves.

9. The combinations that are used along the market procurement channel for tree fruits are extensive. Generally speaking each additional "middleperson" along the way will do 2 things, a) add value to your products, and b) take on an additional chunk of the ultimate consumer price paid.

I. Material Needed

Instructor

TM-II/9/1	Marketing Defined
TM-II/9/2	The 6 Market Functions
TM-II/9/3	Demand Defined
TM-II/9/4	Supply Defined
TM-II/9/5	Elasticity of Supply
TM-II/9/6	Elasticity of Demand
TM-II/9/7	Market Procurement Channels

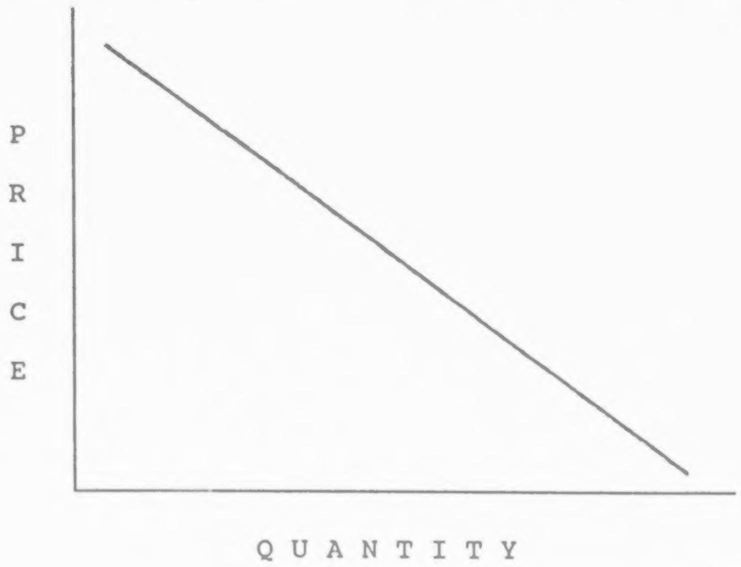
TM-II/9/1

"MARKETING IS THE PERFORMANCE OF ALL BUSINESS ACTIVITIES INVOLVED IN THE FLOW OF GOODS AND SERVICES FROM THE POINT OF INITIAL AGRICULTURAL PRODUCTION UNTIL THEY ARE IN THE HANDS OF THE ULTIMATE CONSUMER."

SIX MARKET FUNCTIONS

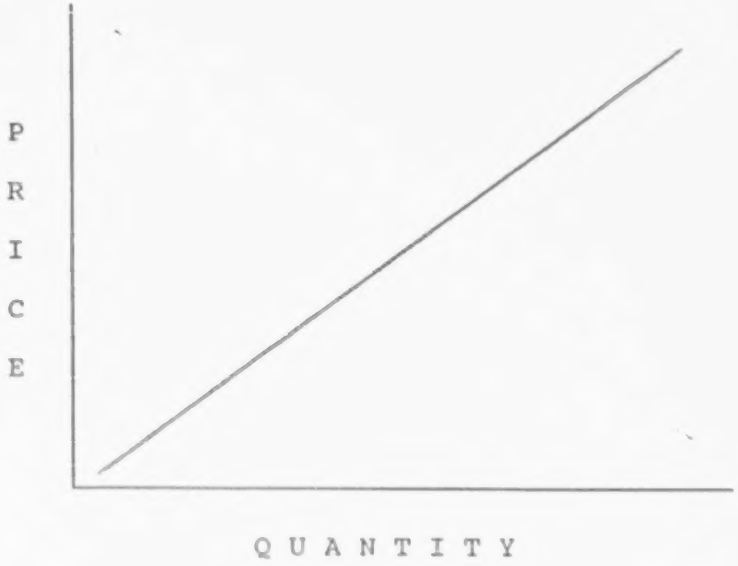
- * TRANSPORTATION
- * STORAGE
- * PROCESSING
- * BUYING AND SELLING
- * FINANCING AND RISK BEARING
- * STANDARDIZATION AND RISK BEARING

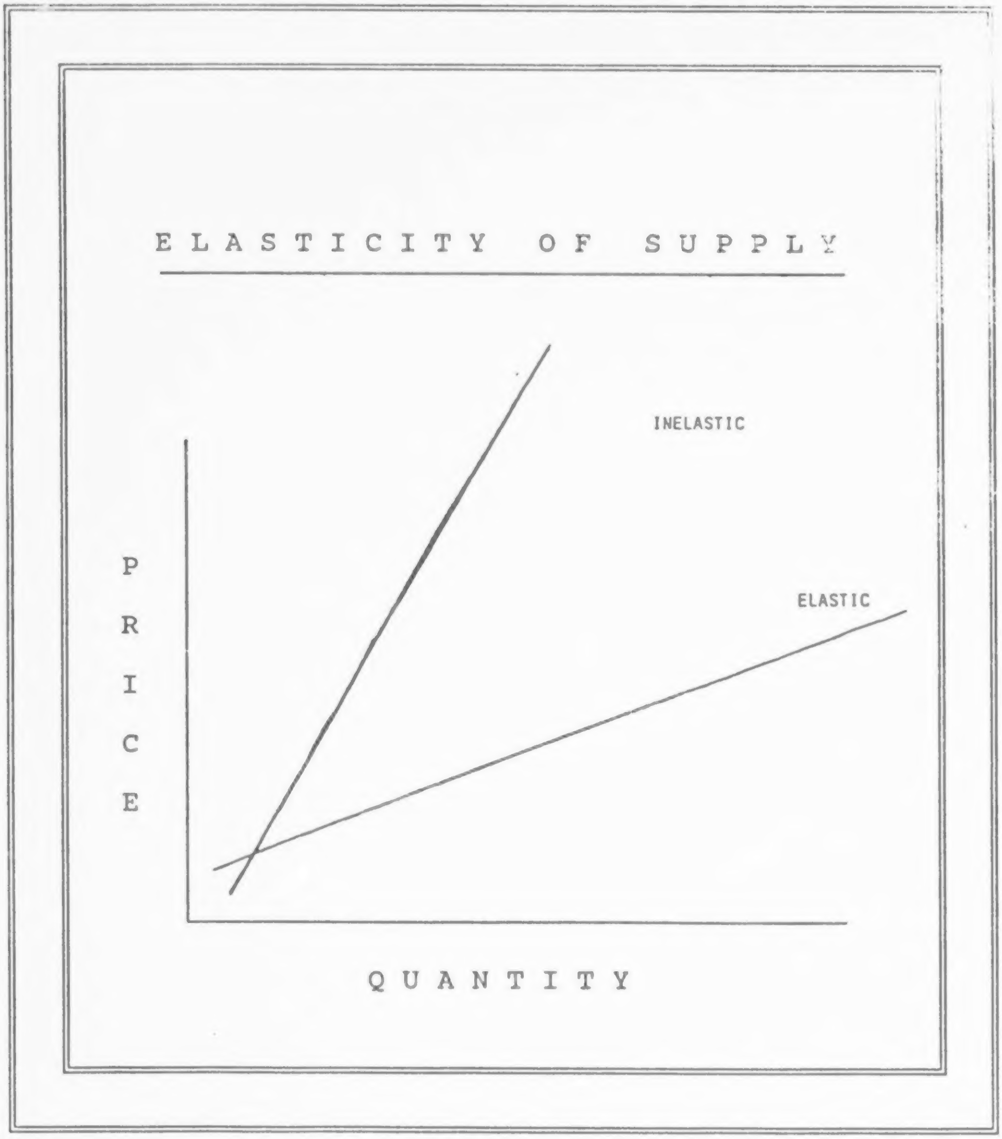
DEMAND IS " . . . THE SCHEDULE OF DIFFERENT QUANTITIES OF A COMMODITY THAT BUYERS WILL PURCHASE AT DIFFERENT PRICES AT A FIXED TIME AND PLACE."



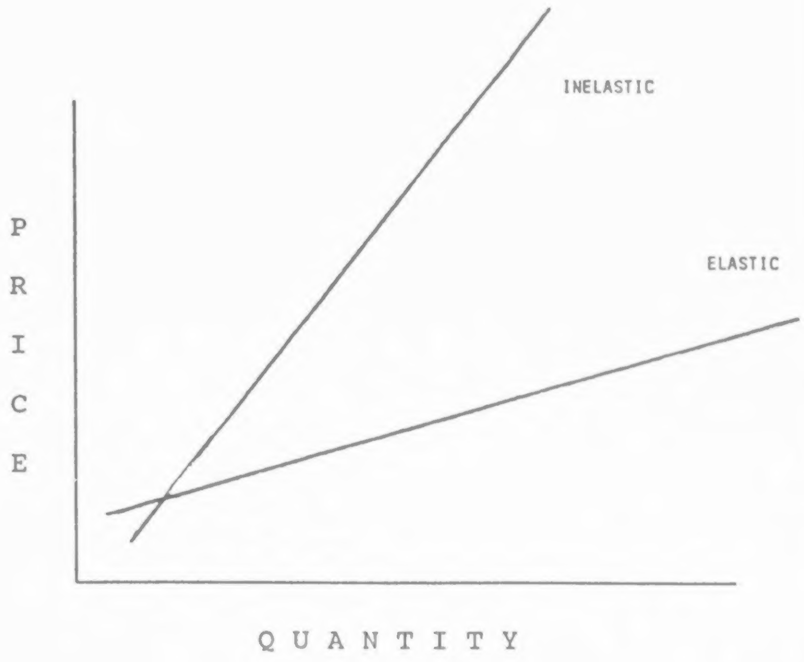
TM-II/9/4

SUPPLY IS " . . . A SCHEDULE OF DIFFERING QUANTITIES THAT WILL BE OFFERED FOR SALE AT DIFFERENT PRICES AT A FIXED TIME AND PLACE."

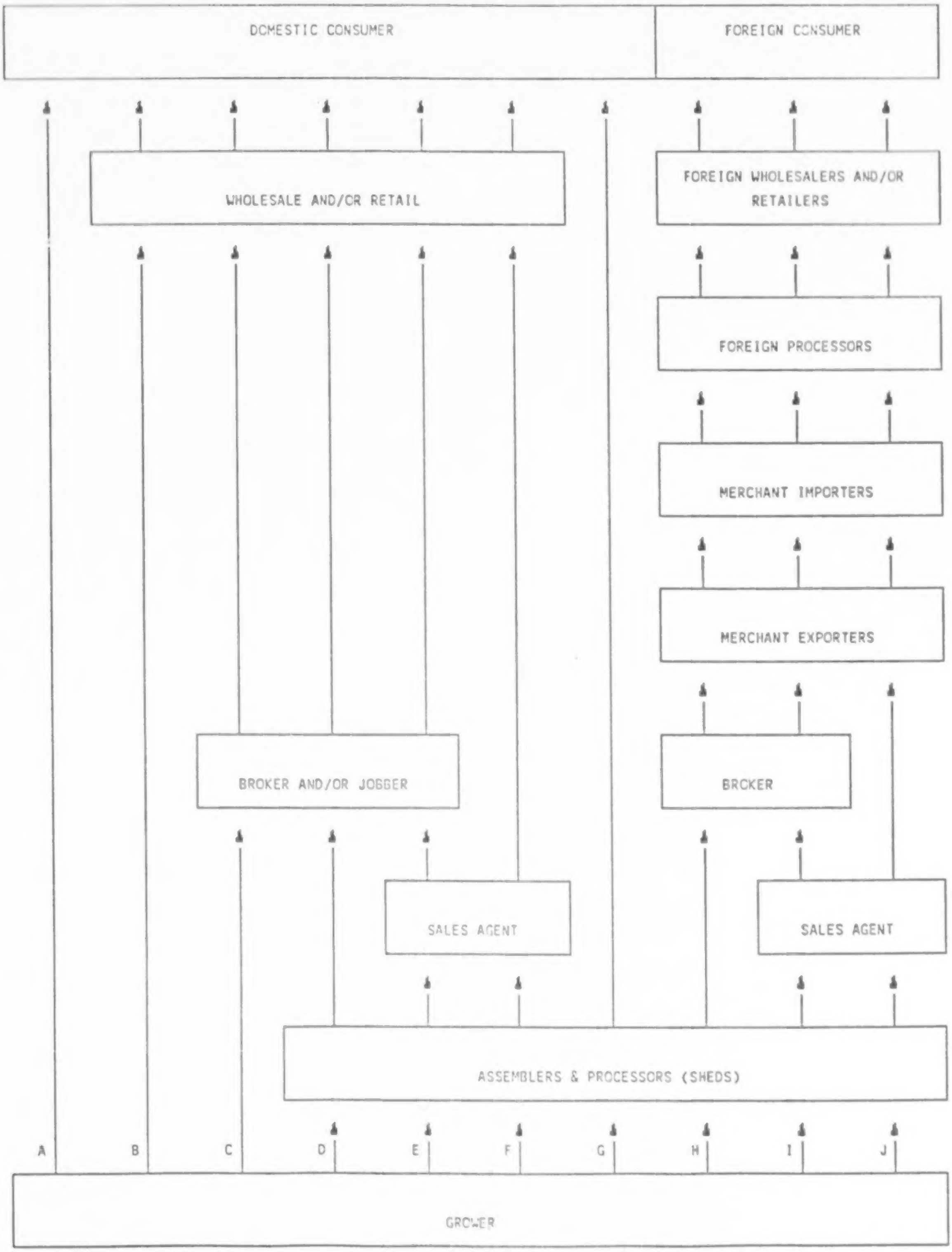



ELASTICITY OF SUPPLY
INELASTIC
ELASTIC
PRICE
QUANTITY

ELASTICITY OF DEMAND



MARKET PROCUREMENT CHANNELS


DOMESTIC CONSUMER
FOREIGN CONSUMER
WHOLESALE AND/OR RETAIL
FOREIGN WHOLESALERS AND/OR RETAILERS
FOREIGN PROCESSORS
MERCHANT IMPORTERS
MERCHANT EXPORTERS
BROKER AND/OR JOBBER
BROKER
SALES AGENT
SALES AGENT
ASSEMBLERS & PROCESSORS (SHEDS)
A
B
C
D
E
F
G
H
I
J
GROWER

ORCHARD BUSINESS MANAGEMENT

UNIT II MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

I. Lesson 10: Labor Management Techniques

A. Review

The conclusions from the previous lesson, Determining the Economic Feasibility of Replanting Orchard Sites, should be reviewed. These include:

1. Marketing is "the performance of all business activities involved in the flow of goods and services from the point of production until they are in the hands of the ultimate consumer.
2. The six market functions are; 1) transportation, 2) storage, 3) processing 4) buying and selling, 5) market intelligence and standardization, and 6) financing and risk bearing.
3. Generally lower prices result in greater demand.
4. Generally higher prices result in more supply being offered.
5. Marketing agreement programs have helped growers gain market strength by improving market conditions for commodities.
6. Marketing agreement programs may include: regulation of quality, regulation of quantity, surplus pools, regulation of containers, research projects, and advertisement and promotion.
7. Cooperative warehouses have allowed atomistic growers to band together to form more oligopolistic organizations to market their fruit.
8. A market procurement channel is made up of a sequence of firms through which a product moves.
9. The combinations that are used along the market procurement channel for tree fruits are extensive. Generally speaking each additional "middleperson" along the way will do 2 things, a) add value to your

products, and b) take on an additional chunk of the ultimate consumer price paid.

B. Objective

Improve the profitability of the orchard operation by making the most efficient use of available labor.

C. Motivation

1. In 1987 the State Employment Security Department estimated up to 42,000 local and migrant workers were employed during the peak harvest period for apples.

2. Of this work force over 50% were seasonal and migrant laborers.

3. Demand for laborers during peak harvest period for apples will increase as anticipated as 5,000 to 10,000 acres of apples come into bearing each year.

4. Accompanying this increased dependency on migrant labor and increasing demand for that labor is the potential for a decrease in the intra-country labor force resulting from the reforms in the immigration laws.

5. All labor intensive forms of agriculture will be affected by these potential shortages and the number one challenge for orchardist in the 90's will be in labor management. This will mean more efficient use of labor, learning to handle the increased cost of labor, learning about and complying with an ever increasing number of labor laws and creating a stronger more unified voice to express the growers side of labor issues.

D. Key Questions

1. How will current changes in the immigration law affect the availability of labor?

2. What are employer responsibilities for the health and safety of orchard workers?

3. What are the laws pertaining to the employment of minors?

4. What are some alternatives to be used as current labor sources decrease?

5. How can good labor relations improve labor efficiency?

6. How can benefits improve labor efficiency?

E. Introduction of Information

1. How will current changes in the immigration laws affect the availability of labor?

   Included in the discussion of this key point should be a presentation by a local Department of Immigration and Naturalization office. This will not only result in up-to-date information but could also serve to help improve relations between local INS representatives and orchardists. Information for this section was taken from the Report on Farmworker Housing: Update to the 1984 Report to the State Board of Health.

   a. The Federal Immigration Reform and Control Act of 1986 was the result of 6 years of controversy and debate. This law affects all undocumented aliens regardless of the country from which they have come. The major provisions of the act include:

      1) Prohibits an employer from knowingly employing an unauthorized alien and establishes employer penalties.

      2) Makes mandatory the inspection of appropriate documentation of all prospective employees by employers. This must be done before employees are hired and employers must keep records of the documents examined.

      3) Employers are prohibited from discrimination against employees on immigration related employment practices.

      4) It establishes guidelines for the legalization of aliens if they can demonstrate they have resided continuously in the United State in illegal status since January 1, 1982. The application period expired in May 1988.

5) It established a Seasonal Agricultural Workers (SAW) program for perishable agricultural commodities.

   a) The national quota is 350,000 workers.

   b) Most agricultural workers can apply for legalization under this category if they can demonstrate that they worked 90 or more man days in the field on fruits, vegetables or other perishable agricultural commodities between May 1, 1985 and May 1, 1986.

6) Beginning in 1990 the admission of additional agricultural workers may be reviewed.

   a) This is known as the Replenishment Agricultural Workers (RAW) program.

   b) This will only apply if the U.S.Department of Agriculture and the U.S.Department of Labor jointly determine there is a shortage of domestic agricultural workers and need to replenish the supply of SAW's in am area.

7) Continues and revises a Temporary Worker (H-2A) program through which employers can temporarily import and employ aliens to work in agricultural jobs. The use of this program will be allowed only if:

   a) There are not sufficient workers who are able, willing, and qualified, and who will be available at the time and place needed.

   b) The employment of the alien will not adversely affect the wages and working conditions of workers in the United States similarly employed.

8) State Legalization Impact Assistance grants will be available through 1991.

   a) These are designed to assist states in the increased demand for social services caused by the act.

   b) It is estimated that Washington State will receive $17 million each year.

b. There has been wide spread speculation on the impact of the IRCA on the fruit industry for the past few years.

No one has a crystal ball on the impact and no doubt the full impact will not be felt by the industry until 1989 harvest season.

c. It is clear however this law and increasing demand for seasonal labor will result in labor shortages and substantially increase labor costs. It is expected that some effects will be:

1) Workers granted status as SAW 's will have no obligation to remain employed in agriculture once they are legalized. This could lead to a reduction of the available work force.

2) Reductions in the availability of documented farm workers by the number of those who can not meet the legalization for the 1982 Group and SAW Group.

3) Potential decreases in the general supply which in turn can cause both an increase in labor cost and an argument for increasing the farm worker labor supply by decision to admit RAW's.

4) Employers may be required to use the H-2A program to recruit workers to harvest crops

    a) Under this program, employers must pay transportation, provide housing at no cost to non-local (migrant) workers and provide family housing if it is the practice in the area to do so.

    b) The housing must meet federal OSHA standards.

    c) Private market rental housing which meet or exceeds local or state standards may be used, provided the employer pays the rent for the workers.

5) Additional efforts by state agencies to certify agricultural workers for employment and provide inspection services for employer provided houses.

6) And increases in the number of farmworkers (SAW's and RAW's) eligible for the limited housing available through the U.S.Farmers Home Administration Section 514/516 Farm Labor Program.

2. What are employer responsibilities for the health and safety of orchard workers?

    a. The agricultural environment is considered one of the most hazardous environment to work in in the United States. It provides a multitude of potentially dangerous situations in the daily tasks required. From pesticide application to machinery operation the opportunity for disaster to strike should be a concern to orchardists.

    b. As the owner of an orchard operation you have a large degree of responsibility for insuring the health and safety of workers in your employ.

        1) As owner, you should feel a moral or ethical responsibility to provide a safe and healthy work environment. Your employees depend on your expertise in the safe use of machinery, equipment and pesticides.

        2) State and federal laws require you to take responsibility for the health and safety of your employees through numerous standard established by such agencies as OSHA. TM/HO-II/10/1 gives a summary of pertinent health and safety laws required.

        3) As owner you owe it to the economic health of your operation to be a safety minded manager. Benefits include:

            (a) Improved attitudes of workers.

            (b) Reducing the likelihood of costly litigation over liability suits.

            (c) Reducing the likelihood of costly fines charged for the violation of state and federal regulations.

            (d) Proper and safe maintenance and use of machinery and equipment will improve its life and efficiency.

            (e) Improve labor efficiency by reduced down time due to injuries.

    c. Some guidelines that will aid in maintaining a safe and healthy work environment include:

        1) Maintain machinery and equipment in an optimum state.

            (a) Do not remove safety guards and shield for speed and convenience.

(b) Keep a schedule for servicing machinery and equipment.

(c) Schedule time to safely check equipment and machinery before peak use periods.

(d) Periodically check all pesticide protective clothing, spray suits for leaks, filters for replacement, boots and gloves for leaks, etc.

2) Orchard owners and managers should be well versed in safety procedures.

(a) Pesticide training is required by law.

(1) Along with this orchard owners and managers must be actively involved in pesticide application.

(2) Managers and owners should be well versed in label requirements of all pesticides used on their operation. This should include knowledge of protective clothing requirements, recent standards of proper application methods and disposal.

(b) Safe procedures for the use of machinery and equipment should be established and evaluated periodically.

(c) Orchard operators and managers should take first aid training and periodically update these skills.

(d) Orchard owners and operators should practice their established safe practices in the field.

3) Educate workers in the safe use of machinery, equipment and pesticides involved in their work.

(a) Time spent properly training workers will have a great effect in reducing occupational dangers.

(b) The cost of training time will be well worth it due to the reduction of costs occurring from fewer accidents.

3. What are the laws pertaining to the employment of minors?

a. There is the potential for increased use of minors in peak labor periods in the near future.

b. If an orchardist employs minors he is subject to certain special regulations in relation to that minor. Many fall under the Fair Labor Standards Act and state laws.

   c. Under these laws generally minors 16 or older may be employed in agriculture. Minors under the age of 16 are excluded from hazardous employment except when working for parents. TM/HO-II/10/2 lists some situations considered hazardous which might be found in orchard operations.

4. What are some alternatives which orchardists might look to as the current labor source decreases?

   Key points 4, 5, and 6 should be discussed using a panel of local orchardists who have instigated effective means of solving challenges raised in these questions. Local county extension agents should be able to help identify local orchardists who would be effective on the panel. Information listed under each of these points will help guide the discussion.

   a. Problems that will arise from potential labor shortages during peak labor periods will require some creative solutions.

   b. It is important orchardists look ahead to potential solutions they might control rather than depending solely on state and federal agencies answers.

   c. Some examples of alternative labor sources or substitutions for labor which have been used in this and other areas include:

      1) Substituting labor with machinery or equipment.

         a) One effective example of this technique has been the use of solid set irrigation however this has not reduced labor demands at peak periods.

         b) Mechanized harvest of tree fruits is being experimented with in other fruit growing regions. At this stage there are many limiting factors that curtail its use in North Central Washington. Some of these include:

            (1) It requires specific training systems which result in large capital investments particularly for space support.
            (2) It has not been conclusively shown that damaged fruit can be held to acceptable levels.

            (3) It has not been adapted to steep topography

            (4) Machinery costs would need to be spread over returns from larger operations.

2) Using alternate labor sources.
    a) Some growers in the Pacific Northwest have successfully used alternate sources of labor to the migrant labor force.
    b) Two examples of possible alternate sources which have worked in some situations include:
        (1) The use of high school students
            (a) Problems may arise due to FLSA laws pertaining to minors.
            (b) Along with this the school term often coincides with peak harvest periods.
            (c) Wages will need to be competitive with other non-agricultural "student" jobs.
        (2) Use of retired individuals has been used by a few growers.
            (a) Housing is provided in the form of hookups for R.V.'s.
            (b) Training systems and picking techniques must meet special physical requirements of older adults.
        (3) These are just two examples and the point is not to suggest that high school students and senior citizens replace the migrant labor force but that creative sources of labor need to be examined.

3) Another solution which may need to be examined is finding ways to improve labor efficiency per picked unit. This could do a great deal to reduce labor requirements.
    a) One major trend for the future may be the use of alternate training systems.
    b) Training systems which create lower compact trees, particularly those that require no ladder work can effectively improve labor efficiency.
    c) European fruit growers have benefited from these techniques in their high cost labor situations.

5. How can good labor relations improve labor efficiency?

   As recommended under key point 4, a panel of orchardists should be used for a discussion answering key point 5. The following information is designed to help the instructor introduce and guide the discussion of key point 5.

   a. In most work settings the personal relationship an employee feels they have with their employer can be as important as their wages, hours of work, or benefits.

   b. Though often overlooked this tends to be true for all workers in the operation from the foreman or manager to the seasonal labor force.

   c. Operators and managers should realize that for most people work gives a strong sense of identity. For example how long is it after meeting someone before you know their occupation. Often this is the second thing you learn after their names.

   d. Interestingly enough most of what is required to develop a better rapport with workers is free or very inexpensive to you the owner and yet it can be the key ingredient in maintaining an adequate work force from year to year.

   e. Some ideas to improve labor relations include:

      1) Acknowledgment of a job well done

      2) Making the work environment as pleasant as possible. This could be as simple as:

         a) Providing a shady cool spot for eating lunches

         b) Coffee for workers in the morning

         c) Providing clean sanitation facilities

         d) Providing a safe work environment

      3) Learning workers language and something about customs.

      4) Listening to the suggestions of full-time workers.

      5) Explain tasks clearly and have work routines well organized.

f. Let the panel of growers discuss what labor relation techniques have proven effective in their operation. (As an alternative, if no panel is available use the information on TM/HO-II/10/3 as a basis for this discussion.

6. How can benefits improve labor efficiency?

Discussion for key question 6 should revolve around the panel discussing what benefit packages have worked effectively for them. Some points that should be covered in this discussion:

a. Seasonal vs Full-time work benefits, how do they compare on each of these operations.

b. Have the panel discuss if benefits improve the moral of workers and if that has resulted in improved work efficiency.

c. Have the panelist discuss their experience in the use of the following benefits

   1) Housing

   2) Health insurance

   3) Bonuses

   4) Profit Sharing

F. Group Discussion

Allow time for panelists to address question from the class. Encourage a discussion of labor management techniques class members have used on their operations.

G. Orchard Visit

In visits following this class discuss the effectiveness of enrollees current labor management practices. Ask if they are planning on using any of the techniques discussed in the lesson and how they might adapt them to their operation.

H. Conclusions

Draw a list of conclusions from the discussion and points made by the panelists.

I. Materials Needed

Instructor/Enrollees

TM/HO-II/10/1 Health and Safety of Orchard Workers

TM/HO-II/10/2 Hazardous Work for Minors

TM/HO-II/10/3 Panel Discussion on Labor Management from the 1985 Horticulture Convention.

STATE HEALTH AND SAFETY STANDARDS FOR

ORCHARD WORKERS

THE FOLLOWING INFORMATION IS SELECTED FROM PARTS OF THE WASHINGTON SAFETY STANDARDS FOR AGRICULTURAL CODE.

SECTIONS INCLUDED ARE THOSE MOST COMMONLY ENCOUNTERED BY THE ORCHARDIST. THEY ARE:

1. INTRODUCTION
2. PART A. GENERAL AND EDUCATIONAL REQUIREMENTS
3. PART B. FIRST AID REQUIREMENTS
4. PART C. HAND TOOLS
5. PART D. PERSONAL PROTECTIVE EQUIPMENT
6. PART E. MATERIALS HANDLING, FARM SHOPS, GUARDING TOOLS
7. PART H. LADDERS, AERIAL MANLIFTS
8. PART K. GENERAL REQUIERMENTS FOR AGRICULTURAL EQUIPMENT AND TRUCKS
9. PART L, SELECTED SECTIONS OF(PP 1-2) ROLLOVER PROTECTIVE STRUCTURES(ROPS) FOR TRACTORS USED IN AGRICULTURE AND INDUSTRY.
10. PART M. FIELD SANITATION

ADDITIONAL HEALTH AND SAFETY STANDARDS FOUND IN THE SAFETY AND STANDARDS FOR AGRICULTURE CODE, BUT NOT INCLUDED IN THIS HANDOUT ARE:

1. PART F. FIRE PROTECTION & IGNITION SOURCES
2. PART G. STORAGE & HANDLING OF ANHYDROUS AMMONIA
3. PART I. WELDING
4. PART J. ELECTRICAL
5. PART L. PAGES 3-41

Part A
GENERAL AND EDUCATIONAL REQUIREMENTS

WAC
296-306-003 Subsections, subdivisions, items, subitems, and segments.
296-306-006 Equipment approval by nonstate agency or organization.
296-306-009 Equipment whether or not owned by, or under control of the employer.
296-306-010 Purpose and scope.
296-306-012 Definitions applicable to all sections of this chapter.
296-306-015 Variance procedures.
296-306-020 Serious injury reporting.
296-306-025 Management's responsibility.
296-306-030 Employee's responsibility.

WAC 296-306-003 Subsections, subdivisions, items, subitems, and segments.

(1) That portion of section numeration appearing after the chapter designation appears in either a three digit or a five digit format (e.g., WAC 296-306-330 and 296-306-33002). The final two digits of the section number are implied decimal extensions of the first three digits and represent a further division of the three digit enumeration.

(2) Sections of this chapter may be divided into subsections (1), (2), (3), etc., which may in turn be divided into subdivisions (a), (b), (c), etc., which may be further divided into items (i), (ii), (iii), etc., which may be further divided into subitems (A), (B), (C), etc., which may be further divided into segments (I), (II), (III), etc., all according to the following hierarchy, e.g.,

Sections	296-306-330 and 296-306-33002
Subsections	(1) (2)
Subdivisions	(a) (b)
Items	(i) (ii)
Subitems	(A) (B)
Segments	(I) (II)

Note: "Part" as used in this standard means a major division of this chapter relating to a specific topic or topics and containing various related sections.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-003, filed 4/22/87.]

WAC 296-306-006 Equipment approval by nonstate agency or organization.

Whenever a provision of this chapter states that only that equipment or those processes approved by an agency or organization other than the department of labor and industries, such as the Underwriters Laboratories or the Bureau of Mines, shall be utilized, that provision shall be construed to mean that approval of such equipment or process by the designated agency or group shall be prima facie evidence of compliance with the provisions of this chapter.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-006, filed 4/22/87.]

WAC 296-306-009 Equipment whether or not owned by, or under control of the employer.

(1) It is the employer's responsibility to ensure that any defective equipment or tools are not used.

(2) When any tool or piece of equipment fails to meet the requirements of any safety standard or recognized safe practice, the tool or equipment shall not be used.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-009, filed 4/22/87.]

WAC 296-306-010 Purpose and scope.

(1) The standards in this chapter apply to all agricultural operations with one or more employees, when such employees are covered by the Washington Industrial Safety and Health Act (WISHA).

(2) In the event that the provisions of this chapter conflict with the provisions contained in any other chapter of Title 296 WAC, this chapter shall prevail. Sections of other chapters 296-24 WAC apply only when specifically referenced in this chapter.

(3) When employees are assigned to perform tasks other than those directly related to agricultural operations, the proper chapter of Title 296 WAC shall apply.

(4) The air contaminant standards contained in WAC 296-62-073 through 296-62-07345 and 296-62-075 do not apply to chapter 296-306 WAC, Safety standards for agricultural code.

Note: Such assignments may involve logging, mining, sawmills, etc., when the products of such activities are removed from the farm site for commercial distribution.

[Statutory Authority: RCW 49.17.040, 49.17.150, and 49.17.240. 79-08-115 (Order 79-9), § 296-306-010, filed 7/31/79; Order 75-2, § 296-306-010, filed 1/24/75.]

WAC 296-306-012 Definitions applicable to all sections of this chapter.

Note: Meaning of words. Unless the context indicates otherwise, words used in this chapter shall have the meaning given in this section.

(1) "Approved" means approved by the director of the department of labor and industries or his authorized representative: *Provided, however,* That should a provision of this chapter state that approval by an agency or organization other than the department of labor and industries is required, such as Underwriters' Laboratories or the Bureau of Mines, the provisions of WAC 296-24-006 shall apply.

(2) "Authorized person" means a person approved or assigned by the employer to perform a specific type of duty or duties or to be at a specific location or locations at the job site.

(3) "Competent person" means one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective action to eliminate them.

(4) "Department" means the department of labor and industries.

(5) "Director" means the director of the department of labor and industries, or designated representative.

(6) "Employer" means any person, firm, corporation, partnership, business trust, legal representative, or other business entity which engages in any business, industry, profession, or activity in this state and employs one or more employees or who contracts with one or more persons, the essence of which is the personal labor of such person or persons and includes the state, counties, cities, and all municipal corporations, public corporations, political subdivisions of the state, and charitable organizations: *Provided,* That any person, partnership, or business entity not having employees, and who is covered by the industrial insurance act shall be considered both an employer and an employee.

(7) "Hazard" means that condition, potential or inherent, which can cause injury, death, or occupational disease.

(8) "Safety factor" means the ratio of the ultimate breaking strength of a member or piece of material or equipment to the actual working stress or safe load when in use.

(9) "Shall" or "must" means mandatory.

(10) "Should" or "may" means recommended.

(11) "Standard safeguard" means a device designed and constructed with the object of removing the hazard of accident incidental to the machine, appliance, tool, building, or equipment to which it is attached.

Standard safeguards shall be constructed of either metal or wood or other suitable material or a combination of these. The final determination of the sufficiency of any safeguard rests with the director of the department of labor and industries through the division of safety.

(12) "Suitable" means that which fits, or has the qualities or qualifications to meet a given purpose, occasion, condition, function, or circumstance.

(13) "Working day," for the purpose of appeals and accident reporting, means a calendar day, except Saturdays, Sundays, and legal holidays, as set forth in RCW 1.16.050, as now or hereafter amended, and for the purposes of the computation of time within which an act is to be done under the provisions of this chapter, shall be computed by excluding the first working day and including the last working day.

(14) "Workmen," "personnel," "man," "person," employee," and other terms of like meaning, unless the context of the provision containing such term indicates otherwise, mean an employee of an employer who is employed in the business of his employer whether by way of manual labor or otherwise and every person in this state who is engaged in the employment of or who is working under an independent contract the essence of which is his personal labor for an employer whether by manual labor or otherwise.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-012, filed 4/22/87.]

WAC 296-306-015 Variance procedures.

(1) In the event some requirements of this agricultural safety standard become impractical under certain conditions, the director of the department of labor and industries may permit a variation from the requirements if the employer provides *equal protection* by other means and complies with the other requirements of chapter 296-350 WAC, variances.

(2) The written application must certify that the employer has properly notified his employees of his application for a variance. Proper notice to employees shall mean that a copy of the written application has been posted in a place or places reasonably accessible to all employees. In addition, a copy of the application shall be mailed to the authorized representative of such employees, if any. The notice shall advise employees and their representatives of their right to request the director to conduct a hearing on the variance application. All the above notices to employees must be made prior to the date the employer makes written application to the director.

Note: An employer who wishes to apply for a permanent or temporary variance shall make a request in writing to the Engineering Section, Department of Labor and Industries, Division of Industrial Safety and Health, P.O. Box 207, Olympia, Washington, 98504. The engineering section will respond by furnishing application forms along with the instructions necessary to meet the intent of the law. A copy of chapter 296-350 WAC, variances will be included if specifically requested.

[Order 75-2, § 296-306-015, filed 1/24/75.]

WAC 296-306-020 Serious injury reporting.

(1) The employer or someone in his behalf shall notify the nearest office of the department of labor and industries within 24 hours of the date of an accident which causes a fatal or possibly fatal injury, an accident which involves acute exposures to pesticides or herbicides or an accident which causes injury requiring hospitalization of any employees.

(2) When any investigator from the department's division of safety and health arrives, the farm employer shall assign to assist in the investigation any persons the investigator deems necessary.

(3) When a fatality occurs, equipment involved in the accident shall not be moved until after a representative from the division of industrial safety and health has completed an investigation unless the equipment must be moved to prevent additional accidents, or to remove the victim.

[Order 75-2, § 296-306-020, filed 1/24/75.]

WAC 296-306-025 Management's responsibility.

It shall be the responsibility of management to maintain and supervise:

(1) A safe and healthful working environment.

(2) An accident prevention program as required by these standards.

(3) A system for reporting and recording accidents that will fulfill statistical requirements of the department of labor and industries. (See chapter 296-27 WAC.)

(4) Safety education and training programs.

(5) Temporary labor camps, as prescribed in WAC 296-24-125 through 296-24-12523, and shall comply with these rules and regulations.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-025, filed 4/22/87. Statutory Authority: RCW 49.17.040, 49.17.150 and 49.17.240. 79-08-115 (Order 79-9), § 296-306-025, filed 7/31/79; Order 77-12, § 296-306-025, filed 7/11/77; Order 75-2, § 296-306-025, filed 1/24/75.]

WAC 296-306-030 Employee's responsibility.

(1) Employees shall cooperate with the employer and other employees in efforts to eliminate accidents.

(2) Employees shall be informed of and observe all safe practices.

(3) Employees shall notify the employer of unsafe conditions of equipment or work places.

(4) Employees shall use all required safety devices and protective equipment.

(5) Employees shall not willfully damage personal protective equipment.

(6) Each employee shall promptly report any job-related injury or illness to his or her immediate supervisor, regardless of the degree of severity.

(7) Employees shall not engage in any activity unrelated to work that may cause injury to other employees during the course of performing work assignments.

(8) Employees shall attend any required training and/or orientation programs designed to increase their competency in occupational safety and health.

(9) Employees shall not report to work under the influence of alcohol or controlled substances. Alcohol or controlled substances shall not be brought on the work site.

[Order 75-2, § 296-306-030, filed 1/24/75.]

Part B
FIRST-AID REQUIREMENTS

WAC

296-306-035 Accident prevention program.

296-306-040 Safety bulletin board.

296-306-045 First-aid training and certification.

296-306-050 First-aid kit.

296-306-055 Safe place standards.

WAC 296-306-035 Accident prevention program.

(1) The agricultural employer shall instruct all employees in safe working practices. Such instruction shall be tailored to the types of hazards to which the employees will be exposed.

(2) The agricultural employer or a delegated representative shall schedule and take part in monthly safety meetings with year-round employee(s), or representatives they may select.

(3) The employer shall conduct weekly inspections of job sites, materials, equipment and operating procedures. Findings from such inspections shall be discussed at safety meetings.

Note: Employers should consider the advantage of having an employee representative participate in such inspections.

(4) A record of safety meetings and inspections shall be kept by the employer. This record shall be made available to personnel of the department of labor and industries upon request.

(5) Agricultural employers shall give appropriate safety instruction to seasonal employees and temporary crews at the beginning of employment.

[Order 75-2, § 296-306-035, filed 1/24/75.]

WAC 296-306-040 Safety bulletin board.

(1) A bulletin board or posting area large enough to display the required safety poster (Form WISHA 1) and other safety education material shall be provided.

(2) The bulletin board shall be positioned so as to be readily visible and located in a place where employees gather during some part of the work day (i.e., at the entrance to a field, a parking area, or in a farm building)

(3) If for any reason any employee is unable to read the notices posted on the bulletin board, the employer shall ensure that the message of the required poster explaining employee rights is communicated to the employee in terms he or she understands. This same requirement shall apply to variance application, denials or grants and to any other notice affecting the employee's rights under WISHA.

(4) Posting shall be in appropriate language, Spanish, etc.

[Order 75-2, § 296-306-040, filed 1/24/75.]

WAC 296-306-045 First-aid training and certification.

(1) One or more persons qualified to render first-aid shall be assigned to each farm or crew during working hours. "Qualified" means that the person holds a current certificate of first-aid training from the department of labor and industries, the United States Bureau of Mines, the American Red Cross or other course of training with equivalent content and hours. A "current certificate" must be no more than three years old.

(2) The above requirement will be met if the farm operator or the spouse of the farm operator holds a current first-aid certificate and is available.

(3) The above requirements shall not apply to employees whose duties require them to be working alone at isolated work stations. However, they shall be checked at intervals by some method agreed upon by the employer and the employee.

[Order 75-2, § 296-306-045, filed 1/24/75.]

WAC 296-306-050 First-aid kit.

(1) All employers covered by WISHA shall furnish first-aid kits as required by the division of safety and health, department of labor and industries.

(2) First-aid supplies shall be readily accessible and provided for persons working alone at isolated stations.

c: A ten-package kit shall contain at least the following items:

1 package 1-inch adhesive bandages (16 per package)

2 packages 4-inch bandage compress (1 per package)

1 package scissors and tweezers (1 each per package)

2 packages 40-inch triangular bandage (1 per package)

1 package antiseptic soap or pads (3 per package)

2 packages eye dressing (1 per package)

1 package 24" x 72" absorbent gauze (1 per package)

Note: Items may be added at employer's option.

(3) First-aid kit sizes and numbers shall be determined by the number of employees normally dependent upon each kit as outlined in the following table:

NUMBER OF EMPLOYEES NORMALLY ASSIGNED TO WORKSITE	MINIMUM FIRST-AID SUPPLIES REQUIRED AT WORKSITE
1 - 15 employees	1 ten-package kit
16 - 30 employees	2 ten-package kits or 1 24-package kit
31 - 50 employees	3 ten-package kits or 1 36-package kit
Over 50 employees (Within 1/2 mile radius)	First-aid Station 136 package kit plus Stretcher and 2 blankets

Note: Kits may be carried in any motor vehicle when such vehicle is used near the crew. Such vehicles may be considered stations when so identified and when the driver is trained in first-aid.

(4) Items used from first-aid kits shall be replaced before the next shift. Kits shall be checked at least weekly for unauthorized removal of items.

[Order 75-2, § 296-306-050, filed 1/24/75.]

WAC 296-306-055 Safe place standards.

(1) Each employer shall furnish to each of his employees a place of employment free from recognized controllable hazards likely to cause serious injury or death to his employees.

(2) Every employer shall furnish and require the use of any safety devices and safeguards that are needed to control recognized hazards. All agricultural methods, operations, and processes shall be so designed as to promote the safety and health of employees.

(3) No employer shall require any employee to engage in any duty or enter any place which is not safe.

(4) No person shall:

(a) Remove, displace, damage, destroy or carry off any safety device, safeguard, notice or warning furnished for use in any employment or place of employment.

(b) Interfere in any way with the use of any safety device, method or process adopted for the protection of any employee.

(5) Intoxicating beverages or narcotics shall not be permitted or used in or around work sites. Workers under the influence of alcohol or narcotics shall not be permitted on the work site. This rule shall not apply to persons taking prescription drugs and/or narcotics as directed by a physician providing such use does not endanger the worker or others.

[Order 75-2, § 296-306-055, filed 1/24/75.]

Part C
HAND TOOLS

WAC
296-306-057 Hand tools.

WAC 296-306-057 Hand tools.

(1) Hoes with handles less than four feet in length or any hand tool used for weeding or thinning crops, when used in a stooped position, are prohibited.

(2) Hand tools shall be kept in good condition.

(3) Hand tools shall be safely stored when not in use.

(4) Hand tools which are unsafe or defective shall not be used.

Note: When there is no other practical or adequate alternative, the director of the department of labor and industries, or his authorized representative may permit a variance pursuant to procedures prescribed by chapter 80, Laws of 1973, RCW 49.17.080 and 49.17.090 and chapter 296-350 WAC.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-057, filed 4/22/87.]

Part D
PERSONAL PROTECTIVE EQUIPMENT

WAC
296-306-060 Personal protective equipment.

WAC 296-306-060 Personal protective equipment.

(1) Employers shall make certain that employees are protected from injury or impairment of any bodily function that might occur through absorption, inhalation or physical contact of any substance, vapor, radiation or mechanical irritant. Adequate protective equipment for eyes, face, head and extremities, protective clothing, respiratory devices, shields and barriers shall be provided and used wherever appropriate. Such equipment shall be maintained in sanitary and reliable condition.

(2) If employees provide their own protective equipment, the employer shall require that such equipment be adequate, and properly maintained and sanitary.

(3) Every item of personal protective equipment shall be designed and constructed in such a way that it will be safe to use for the work being done, and reasonably comfortable to wear.

(4) Eye protectors shall be required wherever workers are exposed to flying objects, welding or cutting glare, injurious liquids, injurious radiation or any combination of these. Eye protectors shall meet the criteria of the American National Standard for Occupational and Educational Eye and Face Protection.

(5) The respiratory protection requirements of the general occupational health standards, chapter 296-62 WAC, shall apply.

(6) Employers shall instruct each employee in the proper use of any item of personal protective equipment used. Such instruction shall include, but not be limited to, any special limitations or precautions indicated by the manufacturer.

(7) At least five gallons of water shall be supplied for emergency while using pesticides or herbicides.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 83-24-013 (Order 83-34), § 296-306-060, filed 11/30/83; Order 75-2, § 296-306-060, filed 1/24/75.]

Part E
MATERIALS HANDLING, FARM SHOPS, GUARDING OF TOOLS

WAC	
296-306-065	Materials handling and storage.
296-306-070	Farm shops.
296-306-075	Bench grinders.
296-306-080	Guarding of hand-held portable power tools.

WAC 296-306-065 Materials handling and storage.

(1) Where mechanical handling equipment is used, safe clearances of three feet shall be allowed for aisles, through doorways and wherever turns or passage must be made. Aisles and passageways shall be kept clear and in good repair, with no obstructions that could create hazards.

(2) Bags, bales, boxes and other containers stored in tiers shall be made secure against sliding or collapse.

(3) Storage areas shall be kept free from any accumulation of materials that could cause tripping, fire or explosion.

(4) Workers shall be instructed in proper lifting or moving techniques and methods. Mechanical devices or assistance in lifting shall be used when moving heavy objects.

(5) When removing materials from piles on horizontal surfaces, the face of the pile shall be removed in a manner that will prevent overhangs.

[Order 75-2, § 296-306-065, filed 1/24/75.]

WAC 296-306-070 Farm shops.

Farm shops shall be exempt from these standards when the following conditions are met:

(1) When the shop equipment is used solely by the owner or others not covered by WISHA

(2) When employees are not permitted in the shop while shop equipment is being operated

[Order 75-2, § 296-306-070, filed 1/24/75.]

WAC 296-306-075 Bench grinders.

(1) The safety guard required on bench grinders shall cover the spindle end, nut, and flange projections. The safety guard shall be mounted so as to maintain proper alignment with the wheel, and the strength of the fastenings shall exceed the strength of the guard.

Note: This requirement does not apply to natural sandstone wheels, or metal, wooden, cloth or paper discs having a layer of abrasive on the surface.

(2) Work rests shall be used to support the work. These shall be of rigid construction and designed to be adjustable to compensate for wheel wear. Work rests shall be kept adjusted sufficiently close to the wheel to prevent the work from being jammed between the wheel and the rest. Adjustment of the work rest shall not be made while the wheel is turning.

(3) Goggles or face shields shall be used when grinding.

[Order 75-2, § 296-306-075, filed 1/24/75.]

WAC 296-306-080 Guarding of hand-held portable power tools.

(1) "Dead man" controls. Each hand-held, power driven tool shall be provided with a "dead man" control, such as a spring-actuated switch, valve, or equivalent device, so that the power will be automatically shut off whenever the operator releases the control.

(2) Grounding. Electrical grounding requirements for portable machinery shall conform to the requirements of this section.

(a) The frames and all exposed, noncurrent-carrying metal parts of portable electric machinery operated at more than 90 volts to ground shall be grounded. Other portable motors driving electric tools which are held in the hand while being operated shall be grounded if they operate at more than 90 volts to ground. The ground shall be provided through use of a separate ground wire and polarized plug and receptacle.

(b) Double insulated tools which are designed and used in accordance with the requirements of Article 250-45 of the National Electrical Code (1971 edition) are exempted from the above grounding requirement in (a).

(3) Portable belt sanding machines. Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley. These guards shall effectively prevent the hands or fingers of the operator from coming in contact with the nip points.

(4) All portable, power-driven saws shall be equipped with guards above and below the base plate or shoe. The upper guard shall cover the saw to the depth of the teeth, except for the minimum arc required to permit the base to be tilted for bevel cuts. The lower guard shall cover the saw to the depth of the teeth, except for the minimum arc required to allow proper retraction and contact with the work. When the tool is withdrawn from the work, the lower guard shall automatically and instantly return to covering position. Pruning and chain saws are exempt from this requirement.

(5) Cracked saws. All cracked saws shall be removed from service.

[Order 75-2, § 296-306-080, filed 1/24/75.]

Part H

LADDERS, AERIAL MANLIFTS, ELEVATED WORK PLATFORMS, BULK STORAGE, PITS, AND TRENCHES

WAC	
296-306-095	Elevated walkways and platforms.
296-306-100	Handrails.
296-306-105	Orchard ladders.
296-306-110	Job-made ladders.
296-306-115	Bins, bunkers, hoppers, tanks, pits and trenches.
296-306-120	Aerial manlift equipment.

WAC 296-306-095 Elevated walkways and platforms.

(1) Elevated walkways, platforms and open-sided floors over 48 inches in height shall be guarded by safety railings. Such railings shall have a top rail approximately 42 inches from the floor and a midrail between the top rail and the working surface. Guard rails shall be strong enough to withstand at least 200 pounds side thrust against the top rail.

(2) Railings may be omitted from particular sections of open-sided floors, platforms or walkways where guard rails impair operations.

(3) Toeboards shall be required on platforms with railing where objects falling from the platform could create a hazard to persons below.

[Order 75-2, § 296-306-095, filed 1/24/75.]

WAC 296-306-100 Handrails.

(1) Each fixed stairway with four or more risers, used by employees, shall be equipped with a handrail.

(2) Handrails shall be mounted from 30 to 34 inches above the tread.

(3) Handrails shall be strong enough to withstand a load of at least 200 pounds applied in any direction.

[Order 75-2, § 296-306-100, filed 1/24/75.]

WAC 296-306-105 Orchard ladders.

(1) Orchard ladders shall be maintained in good condition at all times. Joints between steps and side rails shall be tight. All hardware and fittings shall be securely attached, and the movable parts shall operate freely, without binding or undue play.

(2) Ladders shall be inspected prior to being used. Those ladders which have developed defects shall be withdrawn from service for repair or discard.

(3) Rungs shall be kept reasonably free of any substance which would make them hazardous.

(4) Proper instruction in the use of orchard ladders shall be given each employee at the beginning of employment.

[Order 75-2, § 296-306-105, filed 1/24/75.]

WAC 296-306-110 Job-made ladders.

(1) A job-made ladder is one built by the employer or his employees.

(2) One-by-four-inch nominal lumber, or stronger, shall be used for cleats.

(3) Cleats shall be inset into the edges of side rails to a depth of one-half inch, or filler blocks shall be used on the rails between the cleats.

(4) Each cleat shall be fastened to each rail with three 8d common wire nails or other fasteners of equal strength.

(5) Cleats shall be uniformly spaced at a distance of approximately 12 inches from the top of one cleat to the top of the next.

(6) Side rails shall be continuous, unless splices used develop the full strength of a continuous rail of equal length.

[Order 75-2, § 296-306-110, filed 1/24/75.]

WAC 296-306-115 Bins, bunkers, hoppers, tanks, pits and trenches.

(1) No employee shall enter any bin, bunker, hopper or similar area when there is a danger that loose materials (such as chips, sand, grain, gravel, sawdust, etc.) may collapse around the worker, unless the worker wears a safety belt with a lifeline attached and is attended by a helper.

(2) When employees are required to work in a trench or a pit 4 feet or more in depth, the trench or the pit shall be shored or shall be sloped to the angle of repose as shown in the following table:

Solid rock, shale or cemented sand and gravel- Vertical - (90°)

Compacted gravels - 1/2:1 - (63°)

Average soils - 1:1 - (45°)

Compacted sharp sand - 1-1/2:1 - (34°)

Rounded, loose sand or gravel - 2:1 - (27°)

Clay, silt, loam - shoring required

Note: Silage pits are exempt from this section.

[Order 75-2, § 296-306-115, filed 1/24/75.]

WAC 296-306-120 Aerial manlift equipment.

(1) Safety factor test data on working or structural components submitted by the manufacturer, by a competent testing laboratory, by a registered engineering firm or a registered engineer shall be acceptable evidence that the manlift meets minimum safety requirements. If, however, through use, a reasonable doubt arises as to whether or not this equipment will meet the above requirements, the division of industrial safety and health may require that appropriate tests be conducted and may order any corrections indicated.

(2) Working brake systems shall be on all aerial manlifts.

(3) Automatic restrictive orifices shall be installed in the hydraulic systems of aerial manlifts to the boom in position in case any part of the hydraulic pressure system should fail.

(4) Controls shall be guarded by partial enclosures in order to minimize the chances of accidental contact.

(5) The manufacturer's recommended maximum load limit shall be posted at a conspicuous place near the controls and shall be kept in a legible condition.

(6) The manufacturer's instructional manual, if any, shall be used to establish the proper operational sequences and maintenance procedures. If such a manual does not exist, the employer shall develop the necessary instructions. The instructions shall be available for reference by operators.

(7) A daily visual inspection and the tests in accordance with the manufacturer's recommendations shall be made by the assigned operator.

(8) Only workers qualified by reason of training or experience shall be permitted to operate aerial manlifts.

(9) Defective aerial manlift equipment shall be reported to the employer or his designated representative as soon as identified. The use of defective equipment is prohibited when the defect may cause an accident.

(10) When moving to and from the job site, the basket of the manlift shall be in the low position.

(11) Unsafe practices, including but not limited to, sitting or standing on the basket edge, standing on material placed across the basket, or working from a ladder set inside the basket, are prohibited.

  (a) The basket shall not be rested on a fixed object in such a way that the weight of the boom is supported by the basket.

  (b) The employee or any part of agricultural aerial man lift equipment shall not come within a radius of ten feet from energized high voltage conductors, or into any part of the zone any distance above such a radius.

[Order 75-2, § 296-306-120, filed 1/24/75.]

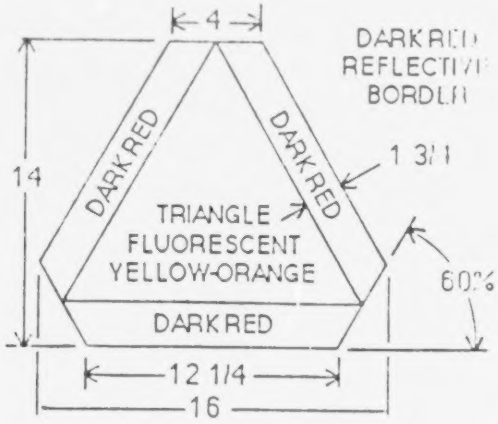
Part K
GENERAL REQUIREMENTS FOR AGRICULTURAL EQUIPMENT AND TRUCKS

WAC
296-306-150 Slow-moving vehicles.
296-306-155 General requirements for maintenance of farm motor vehicles and equipment.
296-306-160 Vehicles.
296-306-165 General requirements for all agricultural equipment.
296-306-170 Auger conveying equipment.
296-306-175 Farm field equipment guarding.
296-306-180 Farmstead equipment.

WAC 296-306-150 Slow-moving vehicles.

Farm tractors, farm equipment and implements of husbandry, when used on public roads are required by state law to have lamps, reflectors and a SLOW-MOVING emblem. At any time one-half hour after sunset to one-half hour before sunrise, slow moving vehicles must be equipped with necessary lights and reflectors.

(1) Slow-moving vehicle emblem. This emblem (see the following figure) consists of a fluorescent yellow-orange triangle with a dark red reflective border. The yellow-orange fluorescent triangle is a highly visible color for daylight exposure. The reflective border defines the shape of the fluorescent color in daylight and creates a hollow red triangle in the path of motor vehicle headlights at night. The emblem is intended as a unique identification for, and it shall be used only on, vehicles which by design move slowly (25 M.P.H. or less) on the public roads.



[Order 75-2, § 296-306-150, filed 1/24/75.]

WAC 296-306-155 General requirements for maintenance of farm motor vehicles and equipment.

(1) Before any person performs service or repair work under hydraulic or mechanical raised dump truck beds, blades, discs, etc., that raised portion of the equipment shall be manually pinned or blocked to prevent falling.

(2) Inflation of tires. Unmounted split-rim wheels shall be placed in a safety cage or other safety device which will prevent a split-rim from striking the worker if it should dislodge while the tire is being inflated.

(3) If a motor vehicle or other farm equipment is in an unsafe condition to operate, the operator shall report the suspected condition immediately to the person in charge. If any defect would make the vehicle or equipment unsafe to operate under existing conditions, the vehicle or equipment shall be removed from service by the person in charge and repaired before being used.

(4) Vehicles shall not be driven at speeds which exceed that which is safe under existing conditions.

(5) Motors shall be shut off prior to refueling. Care shall be taken to prevent fuel from spilling on hot parts.

[Order 75-2, § 296-306-155, filed 1/24/75.]

WAC 296-306-160 Vehicles.

Motor vehicles shall be maintained in good mechanical condition at all times.

(1) Under no circumstances shall workers ride on fenders or running boards of vehicles.

(2) No worker shall ride in or on any vehicle with his legs hanging over the end or sides. A safety bar shall be placed across the rear opening of all crew trucks which are not equipped with tail gates.

(3) Vehicles used to transport workers shall be equipped with a means of preventing tools or materials from striking employees in the event of sudden starts, stops or turns.

(4) Explosives or highly inflammable and/or toxic materials shall not be carried in or on any vehicle while it is used to transport workers.

(5) Exhaust systems shall be installed and maintained in proper condition, and shall be designed to eliminate the exposure of the workers to exhaust gases and fumes.

(6) All vehicles which are specifically used for transporting agricultural workers shall be equipped with first-aid equipment as specified in WAC 296-306-050, including two blankets and an approved fire extinguisher.

Note: When more than one vehicle is located at a station, one equipped vehicle shall meet the intent of this section.

(7) No heating units in which there are open flames or catalytic action shall be used in vehicles transporting crews.

[Order 75-2, § 296-306-160, filed 1/24/75.]

WAC 296-306-165 General requirements for all agricultural equipment.

(1) Definitions.

(a) "Agricultural equipment" means equipment used in production or handling of agricultural products.

(b) "Agricultural field equipment" means tractors, self propelled implements, implements and combinations thereof used in agricultural operations.

(c) "Agricultural tractor" means a two- or four wheel drive type vehicle, or track vehicle, of more than 20 engine horsepower, designed to furnish the power to pull, carry, propel, or drive implements that are designed for agriculture. All self-propelled implements are excluded.

(d) "Augers" means screw conveyors and related accessories designed primarily for conveying agricultural materials on farms.

(e) "Constant-running drives" means those drives which continue to rotate when the engine is running. (With all clutches disengaged.)

(f) "Farm field equipment" means tractors or implements, including self-propelled implements, or any combination thereof used in agricultural operations.

(g) "Farmstead equipment" means agricultural equipment normally used in a stationary manner. This includes, but is not limited to, materials handling equipment and accessories for such equipment whether or not the equipment is an integral part of a building.

(h) "Guarding by location" means a component may be considered guarded by location when, because of its location, it does not present a hazard during operation or maintenance. A component seven feet or more above a working surface is considered guarded by location.

(i) "Ground-drive equipment" means equipment using power supplied by its pulled wheels to move gears, chains, sprockets, belts, pulleys, augers, tines, etc.

(j) "Low profile tractor" means a wheeled tractor possessing the following characteristics:

(i) The front wheel spacing is equal to the rear wheel spacing, as measured from the centerline of each right wheel to the centerline of the corresponding left wheel; or rear wheel spacing may be increased to gain stability, but in no instance shall the front wheel spacing be less than shown in Table I.

TABLE I

Horsepower	Minimum Span
20 - 30	48 Inches
31 - 40	50 Inches
41 - 50	52 Inches
51 - 60	54 Inches
61 - 70	56 Inches
71 and Over	60 Inches

(ii) The clearance from the bottom of the tractor chassis to the ground does not exceed 18 inches.

(iii) The highest point of the hood does not exceed 60 inches, and

(iv) The tractor is designed so that the operator straddles the transmission when seated.

(k) A "guard" or "shield" is a barrier which insures that no part of an employee may come into contact with a hazard created by a moving machinery part.

(l) "Power take-off shafts" are the shafts and knuckles between the tractor, or other power source, and the first gear set, pulley, sprocket, or other components on power takeoff shaft driven equipment.

(2) Immediate priority shall be given to guarding of power take-off drives on all tractors and equipment. These must be guarded no later than January 1, 1976.

(3) All other power transmission components must be guarded on all equipment manufactured on or after January 1, 1976.

(4) If unguarded power transmission components on older field equipment show evidence that they were once guarded, the guards shall be replaced by January 1, 1976.

(5) The manufacturer's instruction manual, if published by the manufacturer and currently available, shall be the source of information for the safe operation and maintenance of field equipment.

(6) Operating instructions. At the time of initial assignment and at least annually thereafter, the employer shall instruct every employee in the safe operation and servicing of all covered equipment with which he is or will be involved, including at least the following safe operating practices:

(a) Keep all guards in place when the machine is in operation;

(b) Passengers, other than persons required for instruction or machine operation shall not be permitted to ride on equipment unless a passenger seat or other protective device is provided.

(c) Stop engine, disconnect the power source, and wait for all machine movement to stop before servicing, adjusting, cleaning, or unclogging the equipment, except where the machine must be running to be properly serviced or maintained, in which case the employer shall instruct employees as to all steps and procedures which are necessary to safely service or maintain the equipment;

(d) Make sure everyone is clear of machinery before starting the engine, engaging power, or operating the machine;

(e) Lock out electrical power before performing maintenance or service on farmstead equipment.

(7) Methods of guarding. Except as otherwise provided in this chapter, each employer shall protect employees from coming into contact with moving machinery parts as follows:

(a) Through the installation and use of a guard or shield or guarding by location;

(b) Whenever a guard or shield or guarding by location is infeasible, by using a guardrail or fence.

(8) Strength and design of guards.

(a) Where guards are used to provide the protection required by this section, they shall be designed and located to prevent inadvertent contact with the hazard being guarded.

(b) Unless otherwise specified, each guard and its supports shall be capable of withstanding the force that a 250 pound individual, leaning on or falling against the guard, would exert upon that guard.

(c) Guards shall be free from burrs, sharp edges, and sharp corners, and shall be securely fastened to the equipment or building.

(9) Guarding by railings. Guardrails or fences shall be capable of preventing employees from inadvertently entering the hazardous area.

(10) Servicing and maintenance.

(a) Whenever a moving machinery part presents a hazard during servicing or maintenance, the engine shall be stopped, the power source disconnected, and all machine movement stopped before servicing or maintenance is performed, except where the employer can establish that:

(i) The equipment must be running to be properly serviced or maintained;

(ii) The equipment cannot be serviced or maintained while a guard or guards are in place; and

(iii) The servicing or maintenance is safely performed.

(11) Shields, guards and access doors that will prevent accidental contact with rotating machine parts on constant-running drives shall be in place when the machine is running. This requirement shall not apply to combines where such guards could create fire hazards.

(12) A guard or shield on stationary equipment shall be provided at the mesh point or pinch point where the chain or belt contacts the sprocket or pulley. Revolving shafts shall be guarded by a standard safeguard unless guarded by location. Shafts that protrude less than one-half the outside diameter of the shaft are exempt from this section.

(13) Projections, such as exposed bolts, keys, or set screws on sprockets, sheaves or pulleys on stationary equipment shall be shielded unless guarded by location.

[Order 76-28, § 296-306-165, filed 9/28/76; Order 75-2, § 296-306-165, filed 1/24/75.]

WAC 296-306-170 Auger conveying equipment.

(1) Scope. This section applies only to farm augers as defined in WAC 296-306-165 (1)(e).

(2) General specifications.

(a) All shields and guards shall conform to WAC 296-306-165(13).

(b) Power take off shaft guards shall conform to WAC 296-306-165(8).

(3) Specifications.

(a) Each sweep auger shall have its top half shielded by a guard. No opening in such guard shall exceed 4 3/4 inches in length or width.

(b) The exposed auger at the hopper and the intake shall be guarded or otherwise designed to provide a deterrent from accidental contact with the rotating inlet area and extend a minimum of 2 1/2 inches above and below the exposed auger. Openings in the guard, for the free flow of material, shall not exceed 4 3/4 inches in length or width and shall be of sufficient strength to support a concentrated weight of 250 pounds at mid span.

(c) The hand raising winch shall be provided with a control which will hold the auger at any angle of inclination, and respond only to handle actuation. It shall not be necessary to disengage such control to lower the auger. The force required on the handle to raise or lower the auger manually shall not exceed 50 pounds.

(d) The wire rope lifting pulleys shall be grooved to fit the wire rope with which they are used.

(e) In order to avoid separation, a positive restraint shall be provided between the auger tube and the undercarriage lifting arm. Stops that restrict the maximum raised angle and minimum lowered angle shall be provided.

(f) Wire ropes (cables) shall be rust resistant and selected for the design load and service intended.

(g) Service and operation instructions provided the equipment operator shall include those basic practices for safe operation and servicing.

(4) All augers shall be covered or guarded when exposed to contact.

(5) Equipment manufactured after October 25, 1976, shall be guarded in compliance with the following specification:

(a) Sweep arm material gathering mechanisms used on the top surface of materials within silo structures shall be guarded. The lower or leading edge of the guard shall be located no more than 12 inches above the material surface and no less than 6 inches in front of the leading edge of the rotating member of the gathering mechanism. The guard shall be parallel to, and extend the fullest practical length of the material gathering mechanism.

(b) Exposed auger flighting on portable grain augers shall be guarded with either grating type guards or solid baffle style covers as follows:

(i) The largest dimensions or openings in grating type guards through which materials are required to flow shall be 4 3/4 inches. The area of each opening shall be no larger than 10 square inches. The opening shall be located no closer to the rotating flighting than 2 1/2 inches.

(ii) Slotted openings in solid baffle style covers shall be no wider than 1 1/2 inches, or closer than 3 1/2 inches to the exposed flighting.

[Order 76-28, § 296-306-170, filed 9/28/76; Order 75-2, § 296-306-170, filed 1/24/75.]

WAC 296-306-175 Farm field equipment guarding.

(1) Power takeoff guarding.

(a) All power takeoff shafts, including rear, mid- or side-mounted shafts, shall be guarded either by a master shield, as provided in item (1)(b) of this subdivision, or by other protective guarding.

(b) All tractors shall be equipped with an agricultural tractor master shield on the rear power takeoff except where removal of the tractor master shield is permitted by item (1)(c) of this subdivision. The master shield shall have sufficient strength to prevent permanent deformation of the shield when a 250 pound operator mounts or dismounts the tractor using the shield as a step.

(c) Power takeoff driven equipment shall be guarded to prevent employee contact with positively driven rotating members of the power drive system. Where power takeoff driven equipment is of a design requiring removal of the tractor master shield, the equipment shall also include protection from that portion of the tractor power takeoff shaft which protrudes from the tractor.

(d) Signs shall be placed at prominent locations on tractors and power takeoff driven equipment specifying that power drive system safety shields must be kept in place.

(2) Other power transmission components.

(a) The mesh or nip-points of all power driven gears, belts, chains, sheaves, pulleys, sprockets and idlers shall be guarded.

(b) All revolving shafts, including projections such as bolts, keys or set screws, shall be guarded, except smooth shaft ends protruding less than one-half the outside diameter of the shaft and its locking means.

(c) Ground driven components shall be guarded in accordance with items (2)(i)[(2)(a)] and (2)(ii)[(2)(b)] of this subdivision if any employee may be exposed to them while the drives are in motion.

(3) Functional components, such as snapping or husking rolls, straw spreaders and choppers, cutterbars, flail rotors, rotary beaters, mixing augers, feed rolls, conveying augers, rotary tillers, and similar units which must be exposed for proper function shall be shielded to a degree consistent with the intended function and operator's vision of the component.

(4) Access to moving parts. Where removal of a guard or access door will expose an employee to any component which continues to rotate after the power is disengaged, the employer shall provide, in the immediate area, the following:

(a) A safety sign warning the employee to:

(i) Look and listen for evidence of rotation; and

(ii) Not remove the guard or access door until all components have stopped; and

(iii) On equipment manufactured after October 25, 1976, a readily visible or audible warning of rotation.

(5) If the mounting steps or ladder and the handholds of the propelling vehicle are made inaccessible by installation of other equipment, other steps and handholds shall be provided on the equipment.

(6) A slip-resistant means or material shall be provided on the operator's steps and platform to minimize the possibility of feet slipping.

(7) Ground-drive equipment shall be shielded or guarded as specified in WAC 296-306-165(12) if operators are exposed to drives while they are in motion.

[Order 76-28, § 296-306-175, filed 9/28/76.]

WAC 296-306-180 Farmstead equipment.

(1) Power takeoff guarding.

(a) All power takeoff shafts, including rear, mid- or side-mounted shafts, shall be guarded either by a master shield as provided in WAC 296-306-175 (1)(b) or other protective guarding.

(b) Power takeoff driven equipment shall be guarded to prevent employee contact with positively driven rotating members of the power drive system. Where power takeoff driven equipment is of a design requiring removal of the tractor master shield, the equipment shall also include protection from that portion of the tractor power takeoff shaft which protrudes from the tractor.

(c) Signs shall be placed at prominent locations on power takeoff driven equipment specifying that power drive system safety shields must be kept in place.

(2) Other power transmission components.

(a) The mesh or nip-points of all power driven gears, belts, chains, sheaves, pulleys, sprockets and idlers shall be guarded.

(b) All revolving shafts, including projections such as bolts, keys, or set screws, shall be guarded, with the exception of:

(i) Smooth shafts and shaft ends (without any projecting bolts, keys, or set screws), revolving at less than 10 rpm, on feed handling equipment used on the top surface of materials in bulk storage facilities; and

(ii) Smooth shaft ends protruding less than one-half the outside diameter of the shaft and its locking means.

(3) Functional components, such as snapping or husking rolls, straw spreaders and choppers, cutterbars, flail rotors, rotary beaters, mixing augers, feed rolls, conveying augers, rotary tillers and similar units, which must be exposed for proper function shall be shielded to a degree consistent with the intended function and operator's vision of the component.

(4) Access to moving parts.

(a) Guards, shields and access doors shall be in place when the equipment is in operation.

(b) Where removal of a guard or access door will expose an employee to any component which continues to rotate after the power is disengaged, the employer shall provide, in the immediate area, the following

(i) A safety sign warning the employee to:

(A) Look and listen for evidence of rotation; and

(B) Not remove the guard or access door until all components have stopped; and

(C) On equipment manufactured after October 25, 1976, a readily visible or audible warning of rotation.

[Order 76-28, § 296-306-180, filed 9/28/76.]

Part L

ROLLOVER PROTECTIVE STRUCTURES (ROPS) FOR TRACTORS USED IN AGRICULTURE AND INDUSTRY

WAC	
296-306-200	Rollover protective structures (ROPS) for tractors used in agricultural operations.
296-306-250	Protective frames for wheel type agricultural tractors—Test procedures and performance requirements—Purpose.
296-306-25003	Types of tests.
296-306-25005	Description.
296-306-25007	Test procedures.
296-306-25009	Performance requirements.
296-306-25013	Protective enclosures for wheel-type agricultural tractors—Test procedures and performance requirements—Purpose.
296-306-25017	Types of tests.
296-306-25019	Description.
296-306-25021	Test procedures.
296-306-25023	Performance requirements.
296-306-25095	Exhibit B—Figures C-1 thru C-16.
296-306-260	Rollover protective structures (ROPS) for material handling equipment.
296-306-26001	Minimum performance criteria for rollover protective structures for designated scrapers, loaders, dozers, graders, and crawler tractors.
296-306-265	Protective frame (ROPS) test procedures and performance requirements for wheel-type agricultural and industrial tractors used in agriculture.
296-306-270	Overhead protection for operators of agricultural and industrial tractors.
296-306-27095	Exhibit B—Figures V-1 through V-28.
296-306-275	Seatbelts.

WAC 296-306-200 Rollover protective structures (ROPS) for tractors used in agricultural operations.

(1) Scope. Agricultural tractors manufactured after October 25, 1976, shall meet the requirements in this section.

(2) Rollover protective structure. A rollover protective structure (ROPS) shall be provided by the employer for each tractor operated by an employee. Except as provided in subsection (6) of this section, ROPS used on wheel type tractors shall meet the test and performance requirements of WAC 296-306-250 through 296-306-25023 and ROPS used on track-type tractors shall meet the test and performance requirements of WAC 296-306-260 through 296-306-270. (See ROPS Design and Testing Criteria Addendum.)

(3) Seatbelts.

(a) Where ROPS are required by this section, the employer shall:

(i) Provide each tractor with a seatbelt which meets the requirements of this subsection;

(ii) Require that each employee uses such seatbelt while the tractor is moving; and

(iii) Require that each employee tightens the seatbelt sufficiently to confine the employee to the protected area provided by the ROPS.

(b) Each seatbelt shall meet the requirements set forth in Society of Automotive Engineers Standard SAE J4C, 1965 Motor Vehicle Seat Belt Assemblies,* except as noted hereafter:

(i) Where a suspended seat is used, the seatbelt shall be fastened to the movable portion of the seat to accommodate a ride motion of the operator.

(ii) The seatbelt anchorage shall be capable of withstanding tensile loading as required by WAC 296-306-275 through 296-306-275 (2)(c).

(iii) The seatbelt webbing material shall have a resistance to acids, alkalis, mildew, aging, moisture and sunlight equal to or better than that of untreated polyester fiber.

(4) Protection from spillage. Batteries, fuel tanks, oil reservoirs and coolant systems shall be constructed and located or sealed to assure that spillage will not occur which may come in contact with the operator in the event of an upset.

(5) Protection from sharp surfaces. All sharp edges and corners at the operator's station shall be designed to minimize operator injury in the event of an upset.

(6) Exempted uses. Items (2) and (3) of this section do not apply to the following uses:

- (a) "Low profile" tractors while they are used in orchards, vineyards or hop yards where the vertical clearance requirements would substantially interfere with normal operations, and while their use in incidental to the work performed therein.
- (b) "Low profile" tractors while used inside a farm building or greenhouse in which the vertical clearance is insufficient to allow a ROPS equipped tractor to operate, and while their use is incidental to the work performed therein.
- (c) Tractors while used with mounted equipment which is incompatible with ROPS (e.g., cornpickers, cotton strippers, vegetable pickers and fruit harvesters.)
- (d) Track-type agricultural tractors whose overall width (as measured between the outside edges of the tracks) is at least three times the height of their rated center of gravity, and whose rated maximum speed in either forward or reverse is not greater than 7-miles per hour, when used only for tillage or harvesting operations and while their use is incidental thereto, and which:
  - (i) Does not involve operating on slopes in excess of 40 percent from horizontal; and
  - (ii) Does not involve operating on piled crop products or residue, as for example, silage in stacks or pits, and
  - (iii) Does not involve operating in close proximity to irrigation ditches, streams or other excavations more than two feet deep which contain slopes of more than 40 percent from horizontal; and
  - (iv) Does not involve construction-type operation, such as bulldozing, grading or land clearing.

(7) Remounting. Where ROPS are removed for any reason, they shall be remounted so as to meet the requirements of this subsection.

(8) Labeling. Each ROPS shall have a label, permanently affixed to the structure, which states:

- (a) Manufacturer's or fabricator's name and address;
- (b) ROPS model number, if any;
- (c) Tractor makes, models, or series numbers that the structure is designed to fit, and
- (d) That the ROPS model was tested in accordance with the requirements of this section

(9) Operating instructions. Every employee who operates an agricultural tractor shall be informed of the operating practices contained in Exhibit A of this section and of any other practices dictated by the work environment. Such information shall be provided at the time of initial assignment and at least annually thereafter.

*Copies may be obtained from the Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096.

EXHIBIT A

EMPLOYEE OPERATING INSTRUCTIONS

1. Securely fasten your seat belt if the tractor has a ROPS.
2. Where possible, avoid operating the tractor near ditches, embankments and holes.
3. Reduce speed when turning, crossing slopes and on rough, slick or muddy surfaces.
4. Stay off slopes too steep for safe operation.
5. Watch where you are going, especially at row ends, on roads and around trees.
6. Passengers, other than persons required for instruction or machine operation, shall not be permitted to ride on equipment unless a passenger seat or other protective device is provided.
7. Operate the tractor smoothly—no jerky turns, starts, or stops.
8. Hitch only to the drawbar and hitch points recommended by tractor manufacturers.
9. When tractor is stopped, set brakes securely and use park lock if available.

Note: See Number LI-414-28.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 83-15-017 (Order 83-19), § 296-306-200, filed 7/13/83, effective 9/12/83; 82-08-026 (Order 82-10), § 296-306-200, filed 3/30/82; Order 76-28, § 296-306-200, filed 9/28/76.]

Part M
FIELD SANITATION

WAC
296-306-300 Field sanitation—Scope.
296-306-310 Field sanitation—Definitions.
296-306-320 Field sanitation—Requirements.

WAC 296-306-300 Field sanitation--Scope.

WAC 296-306-300 through 296-306-320 shall apply to any agricultural establishment where one or more employees are engaged on any given hand-labor operations in the field. Except that WAC 296-306-320(3) (Handwashing facilities) and 296-306-320(4) (Toilet facilities) do not apply to employers of workers who:

(1) Are engaged in field activities for the production of grains, seeds, livestock, or livestock feed; or

(2) Use vehicles, machinery, or animals as part of their field activities and, when needed, can transport themselves to and from toilet and handwashing facilities.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-300, filed 4/22/87.]

WAC 296-306-310 Field sanitation--Definitions.

(1) "Agricultural employer" means any person, corporation, association, or other legal entity that owns or operates an agricultural establishment or on whose premises or in whose interest an agricultural establishment is operated and any person, corporation, association, or other legal entity who is responsible for the management and condition of an agricultural establishment or who acts directly or indirectly in the interest of an employer in relation to any employee.

(2) "Agricultural establishment" is a business operation that uses paid employees in the production of food, fiber, or other materials such as seed, seedlings, plants, or parts of plants.

(3) "Accessible" means no more than one-fourth mile or five minutes travel time from the work location served.

(4) "Hand-labor operations" means agricultural activities or operations performed by hand or with hand tools. Some examples of "hand-labor operations" are the hand harvest of vegetables, nuts, fruit, hand weeding of crops, and hand planting of seedlings. "Hand-labor" does not include such activities as logging operations, the care or feeding of livestock, or hand-labor operations in permanent structures (e.g., canning facilities or packing houses).

(5) "Handwashing facility" means a facility providing a tap with an adequate supply of water, approved by the local health authority. Soap, single-use hand towels and either a basin or other suitable container for washing shall be provided.

(6) "Potable water" means water that meets the standards for drinking purposes by the state or local authority having jurisdiction or water that meets the quality standards prescribed by the local health authority in accordance with the United States Environmental Protection Agency's National Interim Primary Drinking Water Regulations, published in 40 CFR Part 141.

(7) "Toilet" means a facility designed for the purpose of both defecation and urination, including biological or chemical toilets, combustion toilets, or sanitary privies. Toilets may be either fixed or portable.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-310, filed 4/22/87.]

WAC 296-306-320 Field sanitation---Requirements.

Agricultural employers shall provide the following for employees engaged in hand-labor operations in the field, without cost to the employee:

(1) Orientation: Orientation shall be given verbally to all employees in a manner readily understandable by each employee and shall include:

  (a) Potable water: The location(s) of potable water supplies;

  (b) Nonpotable water: Identification of all nonpotable water at the worksite and prohibition of the use of nonpotable water with an explanation of the possible consequences of using nonpotable water;

(c) Handwashing facilities: The location(s) of handwashing facilities with an explanation of when they should be used and the consequences of nonuse; and

(d) Toilet facilities: The location(s) of toilet facilities with an explanation of the necessity to use them and to keep them sanitary as well as the possible consequences of nonuse.

(2) Potable drinking water.

(a) The water shall be provided and shall be placed in locations readily accessible to all employees.

(b) Potable water dispensers shall be designed, constructed, and serviced so that sanitary conditions are maintained. They shall be capable of being closed and shall be equipped with a tap.

(c) Open containers such as barrels, pails, or tanks for drinking water from which water must be dipped or poured, whether or not they are fitted with a cover, are prohibited.

(d) Marking: Any container used to distribute drinking water shall be clearly marked, in English and with appropriate international symbol as to the nature of its contents.

(e) Use: Any container used to distribute drinking water shall not be used for any other purpose.

(f) The water shall be suitably cool and in sufficient amounts, taking into account the air temperature, humidity, and the nature of the work performed, to meet employees' needs.

(g) The use of common drinking cups or dippers is prohibited. Water shall be dispensed in single-use drinking cups, personal containers, or by water fountains. Single-use drinking cups mean a container of any type or size whether disposable or not, and may include personal containers so long as the option to use a personal container is exercised by the employee, not the employer. NOTE: Suitably cool water should be sixty degrees Fahrenheit or less. During hot weather, workers may require up to three gallons of water per day.

(h) Employees shall not be permitted to drink from irrigation ditches, creeks or rivers. Potable water shall meet the standards for drinking purposes by the state or local authority having jurisdiction or water that meets the quality standards prescribed by the local health department in accordance with the United States Environmental Protection Agency's National Interim Primary Drinking Water Regulations, published in 40 CFR Part 141.

(3) Handwashing facilities.

(a) One handwashing facility, providing a tap with an adequate supply of water, soap, single-use hand towels and either a basin or other suitable container for washing shall be provided for each thirty employees or fraction thereof, except as stated in (h)(ii) of this subsection.

Note: Nonpotable water shall not be used for washing any portion of the person, except as specifically permitted by the health authorities having jurisdiction.

(b) Running water: Each facility shall be provided with running water.

(c) Soap: Each facility shall be provided with a dispenser containing handsoap or a similar cleansing agent.

(d) Towels: Each facility shall be provided with individual single-use hand towels.

(e) Cleanliness: Facilities shall be maintained in a clean and sanitary condition in accordance with appropriate public health sanitation practices.

(f) Waste: Waste receptacles shall be provided. Disposal of wastes from the facilities shall not create a hazard or cause an unsanitary condition.

(g) Reasonable use: Employees shall be allowed reasonable opportunities during the work period to use the facilities.

(h) Location:

(i) Facilities shall be accessibly located in close proximity to toilet facilities and within one-quarter mile of each employee's place of work in the field.

(ii) Where it is not feasible to locate facilities within one-quarter mile, or where facilities are otherwise inaccessible, suitable immediate transportation shall be provided within five minutes transportation time, to facilities meeting the requirements of this subsection. Under exceptional and compelling circumstances, such as adverse weather, temperatures below freezing, or isolated terrain, longer transportation times may be used.

(4) Toilet facilities.

(a) One toilet facility shall be provided for each thirty employees or fraction thereof, except as stated in (h)(ii) of this subsection.

(b) Each employer shall ensure, at the beginning of each day, that the toilets are inspected. If any toilet facility fails to meet the requirements of this section, immediate corrective action shall be taken. Inspections shall be documented and the record shall be maintained at the work site for at least seventy-two hours.

(c) Toilet facilities shall have doors that can be closed and latched from the inside and shall be constructed to ensure privacy.

(d) Cleanliness: Facilities shall be maintained in a clean, sanitary, and functional condition and in accordance with the appropriate public health sanitation practices.

(e) Toilets shall be supplied with toilet paper.

(f) Waste: Disposal of wastes from the facilities shall not create a hazard or cause an unsanitary condition.

(g) Reasonable use: Employees shall be allowed reasonable opportunities during the work period to use the facilities.

(h) Location:

(i) Facilities shall be accessibly located in close proximity to hand washing facilities and within one-quarter mile of each employee's place of work in the field.

(ii) Where it is not feasible to locate facilities within one-quarter mile, or where facilities are otherwise inaccessible, suitable immediate transportation shall be provided within five minutes transportation time, to facilities meeting the requirements of this subsection. Under exceptional and compelling circumstances, such as adverse weather, temperature below freezing, or isolated terrain, longer transportation times may be used.

[Statutory Authority: RCW 49.17.040 and 49.17.050. 87-09-079 (Order 86-46), § 296-306-320, filed 4/22/87.]

TM/HO-II/10/2

Guidelines For Employing Minors

Generally, minors 16 or older may be employed in agriculture. Minors under the age of 16 are excluded from hazardous employment except when working with parents. The following list contains some situations found on orchard operations which would be classified as hazardous under the Federal Fair Labor Standards Act (FSLA).

1. Operating or connecting or disconnecting an implement to a tractor of over 20 PTO horsepower.
2. Operating or assisting in the operation of a power post hole digger, power post hole driver, or non-walking rotaray tiller.
3. Operating or assisting in the operation of (a) trencher or earthmoving equipment, (b) forklift, (c) power driven, circular, band or chain saw.
4. Felling, bucking, skidding, or unloading timber with a diameter greater than 6 inches.
5. Working from a ladder or scaffold at a height of over 20 feet.
6. Riding on a tractor as a passenger or helper.
7. Working inside CA storage areas.
8. Handling or applying agricultural chemicals classified under the Federal Insecticide, Fungicide, and Rodenticide Act as Category I--POISON (identified by skull and cross bones) and Category II--WARNING on label.
9. Handling or using a blasting agent.

Exclusions are available for persons over 14 who have completed applicable training programs or who are vocational student learners. Vocational student learner exclusions may apply to occupations 1-5. Four-H farm training applies only to 1.

Other rules applying to the employment of minors include:

1. Minors under the age of 16 cannot be employed during regular school hours.
2. Written parental consent must be obtained for minors under 16 unless working on the same farm where parents are employed.
3. Minors under 12 cannot be employed on orchards subject to minimum wage provisions of the Federal Law.

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

II. Lesson 11: Organizing the Orchard Business

A. Review

The previous lesson, should be reviewed. Go over some of the key points presented by panelists on labor issues.

B. Objective

To plan for the most beneficial ownership structure for the orchard operation.

C. Motivation

1. Many orchards are family businesses where much of the production labor, management skills, marketing, and record keeping is performed by one or more members of the owner(s) family.
2. Most orchards are sole proprietorships and there are many advantages to this form of business organization which often works well with younger families.
3. As time passes many operations will wish to move younger members, sons and daughters into positions of managers and owners. If this is to occur most operations will need to examine alternative organizational structures such as partnerships or corporations.

D. Key Points

1. What are some guidelines governing a partnership?
2. What are the advantages of forming a partnership?
3. What should be covered in a partnership agreement?
4. How are partnerships transferred or dissolved?
5. What are some guidelines governing a corporation?
6. What is the difference between a sub-chapter S corporation and a sub-chapter C corporation?

7. What are the advantages of forming a corporation?

8. How does the 1986 Tax Reform Act affect corporations?

E. Introduction of Information

1. What are the guidelines governing a partnership?

   Use TM/HO-II/11/1 to aid in explaining the guidelines which govern partnerships. Ask enrollees if any of them are organized under a partnership and how it has affected their business operation.

   a. Rules governing partnerships in Washington State are based on the Uniform Partnership Act (U.P.A.)

      1) The U.P.A. definition of a partnership is "an association of two or more persons to carry on as co-owners a business for profit".

      2) These rules specified by the U.P.A. or some form thereof are in effect in most states across the United States.

   b. The rules governing the structure of a partnership are fairly flexible allowing individuals a great deal of control in designing their partnership agreement.

      1) Partnership agreements may be verbal or written agreements to be legal.

      2) A partnership may be implied by a given situation even though individuals involved in the situation do not call themselves partners or realize a partnership exists.

         a) This can have important legal consequences such as liability to you for an implied "partners" action in a business activity relating to your impled "business".

         b) Individuals working closely with others in their business situations should be aware of what might be construed as a partnership relationship to avoid potential "legal hassles".

         c) In the U.P.A. definition the word person includes individuals, other partnerships, corporations, or other associations.

            (1) This does not include non-capable parties however such as those deemed incompetent.

(2) Minors may be included as a partner but many of their legal responsibilities would not hold up in court should questions arise.

d) Determining whether a partnership relationship really exists is distinguished by many factors, no single one of which conclusively establishes the relationship. Some factors which may be used to determine this relationship include:

(1) Co-ownership of property.

(a) Co-ownership of property alone is not an indices of a partnership.

(b) Co-ownership must be of property used for carrying on the business.

(2) Sharing of profit and losses of the business can be a key factor in determining if a partnership exists.

(a) This does not extend to profit sharing with employees as employees generally do not show losses or control of the operation.

(b) The U.P.A. states that no inference can be taken from situations where profits were received in payment of rent to a landlord. However, lease arrangements may need a statement excluding the possibility of a partnership.

(3) The amount of control in the business coupled with the showing of profit and loss is a very powerful combination in determining if a partnership relationship exists.

e) As stated previously the rules governing partnerships are fairly unstructured and should become specific in the individual partnership agreement. If however, unspecified in the agreement the following rules govern a partnership these are in effect the "default" agreement.

(1) Partnership property (if not otherwise stated in the partnership agreement).

(a) Partnership property (that which is acquired with partnership funds during the operation of the partnership business) is referred to as tenant in partnership. It is governed by the following rules.

  (1) Each partner has equal rights to use the property for partnership purposes.

  (2) The property may not be used outside the business without the consent of all partners.

  (3) Partners cannot sell their share of the partnership property without the consent of all partners.

  (4) Partners cannot use their share of partnership property as "security" or "collateral" for a separate non-partnership debt.

  (5) If one partner should die his share of the partnership property goes back to surviving partners not the deceased partners heirs.

(b) In some partnerships personal or real property of various partners may be used in the partnership business.

  (1) If this is the case, title of the personal property remains in the name of the individual and does not fall under tenant in partnership.

  (2) The partnership may lease such real and personal property as an alternative to owning such property.

2) Unless otherwise stated each partner has an equal voice in the operation of the business with the majority vote of partners controlling business decisions.

3) Unless stated otherwise specified, profits and losses are distributed equally among partners.

4) Partnerships must have their own set of records and must file partnership income tax information. This is done even though income taxes are paid by the individuals in the partnership.

5) Partnership liability. It is important that individuals understand the additional liability they will incur in becoming involved in a partnership. It is important to choose partners carefully.

    (a) All partners are jointly liable for partnership debts and obligations.

    (b) All partners are liable for criminal acts of the partnership business and/or criminal acts from which the business is benefited.

    (c) All partners are liable for wrongful acts committed by any partner in the operation of the partnership business.

    (d) New partners are liable for all partnership obligations which existed prior to the new partners entry into the partnership.

c) The Uniform Limited Partnership Act is designed to limit liability for partners whose involvement in a business is investment capital.

    (1) Limited partners are liable for partnership debt only to the amount of their investment.

    (2) General partners still maintain control of management decision and are liable for all additional debt.

    (3) The limited partner is restricted from having any managerial powers and cannot have her/his name appear in the partnership name.

    (4) Limited partners must file a certificate indicating their interest in the operation and their rights to share in the profit.

2. What are the advantages and disadvantages of forming a partnership?

   Use TM/HO-II/11/2 to list some advantages and disadvantages of forming a partnership. Ask enrollees who are organized in a partnership what they have found to be the pluses and minuses of partnership organization.

   a. Advantages

      1) Generally the major advantage in forming a partnership is that it provides a good way for individuals to pool resources and provide more efficient use of those resources for business progress.

         a) These resources may include capital, managerial skill, managerial time, and/or operator labor.

         b) Partnerships are often used to match strong to weak resources of partners. This is usually the result of family partnerships arrangements where older family members provide capital and managerial skill to younger family members manager/operator labor.

      2) Partnerships are the simplest business organizations to form for 2 or more individuals.

         a) As discussed previously no governmental approval is required for formation or dissolution of a partnership.

         b) The unstructured guidelines of the U.P.A. allows individuals the freedom to structure their partnership agreement to suit individual needs.

         c) The legal and record keeping requirements of a partnership are much easier than those of a corporation.

      3) Partnerships unlike sole proprietorship provide a means of estate planning or planning for the continuation of the business from one generation to the next. This will be discussed further in Lesson 12.

   b. Disadvantages

      1) As discussed previously the additional liability involved in forming a partnership is one of the major deterrents.

    a) This disadvantage may be overcome in choosing partnership organizations with fewer partners and choosing partners carefully.

    b) Avoiding the liability of partnership debt on personal funds of partners may not be possible for most orchardists even if a corporation is formed. Many lenders require corporate members to be personally liable for loans.

2) No matter how amiable the partners, partnerships will result in more conflicts in managerial decision making.

    a) Combination of resources is not the only result of forming a partnership. Goals dependent on those resources must be combined and hybridized as well.

    b) There may be more goals than the resources can supply.

    c) Often times the more members in the partnership the more conflicts. For many family partnerships having several sons and daughters will not result in a workable arrangement.

    d) Most family partnerships result in sacrifices on one member at a given period of time.

        (1) Older family members may actually have to "gear up" the operation to generate enough income for the addition of a married child into the operation.

        (2) Younger partners may sacrifice some managerial control they would like to have in their 40's. That is often not allowed working with parents in a partnership.

    e) Conflicts are not limited to partnerships but may exist to some degree in corporations and are the reasons many individuals choose the control of the sole proprietorship.

3. What are the steps involved in forming a partnership agreement?

   Use TM/HO-II/11/3 can give some guidelines for forming a partnership agreement.

   a. The first step in forming a partnership agreement is to decide whether an agreement is feasible for the proposed operation. Some information which may be used to determine this includes:

      1) A set of partnership business goals.

         a) Each member of the partnership should sit down and make up a list of goals they personally wish to achieve through the partnership.

         b) These individual goals should be shared with all partners and compromises made from apparently conflicting goals.

         c) All partners should evaluate each of the remaining goals as to the feasibility for use as business goals.

         d) The final list should then be made up and used as business goals. Such goals are not set in concrete but form a basis of what hopefully will be achieved through the partnership. (After a partnership is formed these goals should be evaluated periodically.)

         e) If an acceptable set of goals cannot be established serious doubt should be placed on the feasibility of the partnership.

         f) Having a specific set of goals can help avoid future conflicts. More partnerships fail because of internal conflicts than lack of business success.

      2) Next an inventory of what each partner will contribute to the partnership should be made up.

a) After this is established, estimates of net returns to the business should be made and entered on the inventory with each partners proposed shares being calculated.

b) These estimates of partner returns can be compared to the personal goals to see if the partnership will provide the income needed by various partners.

c) An alternate to this is that profits are divided on a 50-50 basis in which the partnership leases equipment and real estate from one or more of the partners.

b. If following the preceding steps the partnership is deemed feasible it is time to prepare for the lawyer.

1) It is important to make use of good legal assistance in making a partnership arrangement.

a) Funds spent for "preventive" legal assistance will be much less than those spent on disputes.

b) The agreement should be complete and form a solid foundation from which the partnership can be built.

2) Being prepared before going to meet with the lawyer will help reduce the legal fees required to do the job.

a) Lawyers time will be used most efficiently if all partners of the proposed partnership have determined the guidelines they want in advance.

b) TM/HO-II/11/3 gives an outline of questions which should be discussed before going to the lawyer. Jotting down answers to these questions may prove helpful in keeping on target when conferring with lawyers.

4. How are partnerships dissolved?

Use TM/HO-II/11/4 to describe the process by which partnerships are terminated.

a. A great deal of consideration should be given to the ways in which a partnership may be terminated. This should be done in the initial planning stages of the partnership. Some plans may need to be specified for the continuance of the business in the partnership agreement.

b. Under Washington State guidelines based on the U.P.A. dissolution is "a change in the nature of the partnership which ultimately culminates in its termination".

1) Dissolution may occur without a court decree. This may occur without a violation of the partnership agreement.

   a) Non-court decreed dissolutions which occur within in partnership agreement include:

      (1) Dissolution at the end of a term specified in the partnership agreement.

      (2) Dissolution by the express will of any partner when no definite term exists in the agreement.

      (3) Dissolution based on the expressed will of all partners.

      (4) Dissolution due to the expulsion of a partner based on guidelines set up within the partnership agreement.

   b) Dissolution may occur by the express will of any partner for violation of the partnership guidelines.

   c) Dissolution may occur by an event which makes it unlawful for the business to operate.

   d) Dissolution may occur upon the death of any partner.

   e) Dissolution may occur by the bankruptcy of a partner.

2) Dissolution may occur by court decree. This is caused by:

   a) A partner being unable to perform his/her part in the operation.

   b) A partner being guilty of conduct which adversely affects the business.

   c) A partner continually breaching the partnership agreement.

   d) The partnership business can only be carried at a loss.

   e) Other circumstances which show dissolution to be equitable.

c. With dissolution does not come freedom from liabilities. Under the Washington guidelines based on the U.P.A. winding up is a series of steps taken after dissolution to pay for partnership debts and fully terminate the partnership business.

   1) The rules for distributing of partnership assets upon winding up are:

      (a) Liabilities of the partnership are paid first to creditors other than partners, then to partners other than capital and profits, partners capital and finally partners profit.

      (b) Partners are liable for this repayment if the partnership business cannot supply the funds, personal funds must be used.

5. What are some guidelines governing a corporation?

Use TM/HO-II/11/5 to help describe important guidelines which govern the formation of a corporation

a. Corporations exist under state law. They are legal creatures whose existence is completely dependent on state statutes.

   1) Corporations may conduct normal business activities such as own capital, pay taxes, make contracts, sue or be sued.

   2) Corporations have most of the legal rights and responsibilities of individuals. They are a separate entity from their shareholders though and it is this characteristic which distinguished them from other business forms.

b. The state guidelines for forming a corporation are:

   1) Articles of incorporation must be drawn up for a corporation to be legal.

   2) Along with this an initial annual report must be sent which lists officers, directors, and a brief description of corporate activities (thereafter the annual report is filed when annual license fees are paid).

   3) The initial annual report along with two duplicates of the original articles of incorporation are then filed with the Secretary of State along with filing fees.

4) Upon approval one of the duplicates is filed and one returned along with a certificate of incorporation.

5) The corporations existence begins with the issue of the certificate of incorporation.

6) Annual reports must be filed at the time annual fees are paid each year.

c. Corporations continue to exist for as long as shareholders desire and so long as annual fees and reports are filed each year. (If the corporation fails to file either fees or reports for 3 consecutive years the corporation will dissolve.)

d. After the return of the certificate of incorporation a meeting of the board of directors should take place. At this time bylaws are adopted and officers are elected.

1) For most farm corporations the board of directors, share holders, and officers are the same people.

2) Often in these situations there is very little difference in the way the business operates under a corporation, other than record keeping requirements and filing for federal income taxes.

6. What is the difference between a sub chapter S corporation and a sub chapter C corporation?

Use the guidelines on TM/HO-II/12/6 to help compare the different status of a sub chapter S corporation and a sub chapter C corporation.

a. Most orchard operations have the choice of two corporate options These choices are based on provisions within the federal tax code.

b. Most orchard operations will find the S chapter tax status the most beneficial.

1) Under the federal income tax guidelines Chapter S corporations are taxed on a similar manner to partnerships.

a) For most orchard business this will result in substantially lower taxes than Chapter C status.

b) Under these guidelines the business is structured as a corporation in all ways but taxes.

2) For a corporation to gain S chapter status it must fall within the following guidelines.

    a) The corporation must have 35 or less shareholders. (Husbands and wives who hold stock are treated as one shareholder.)

    b) No shareholder can be a non-resident alien.

    c) All shareholders must consent to the sub chapter S status.

    d) Only one class of stock can be allocated by the corporation.

    e) All shareholders must be either individuals, estates of individuals or lifetime trusts as owned by the granter.

    f) If more than 25% of the receipts come from investment income sources (rent, royalties, dividends, interest, annuities, or sale or exchange of stock) for 3 consecutive years the S chapter status will be revoked.

c. Orchard operations that fall into the sub chapter C status (those outside the previous guidelines) may find themselves paying higher taxes than organizations under a partnership, or S chapter corporation.

1) Under federal tax regulations sub chapter C corporations are taxed for any income above allowable business deductions at the corporate level.

2) Dividend from these after tax returns are then distributed to individual shareholders where they are taxed again at individual rates.

3) Some of the "double taxation" resulting from chapter C corporations may be avoided by paying out much of the earnings in the form of salaries and benefits.

    a) These salaries are an allowable deduction which reduce income taxed at corporate rates.

    b) However, any remaining profits will be taxed at the corporate level and again at the individual income tax rate.

4) For this reason most orchard operations that wish the benefit of a corporate structure should organize so they qualify for the sub chapter S corporate status.

7. What are the advantages and disadvantages of forming a corporation?

Use the guidelines presented on TM/HO-II/11/7 to discuss the advantages and disadvantages of organizing the orchard operation under a corporate structure.

a. There are many advantages to organizing the orchard operation under a corporate structure. These vary from operation to operation but generally includes the following:

1) One of the most important advantages to a corporate structure is the limited liability of shareholders.

a) This protects shareholders personal assets from legal action taken against the corporation for wrongful and criminal acts.

b) Unlike partnerships only corporate assets can be touched by suits. Individual assets are shielded by the corporate structure.

c) Often times for tightly held family corporations, such as orchard business corporations, shareholders are required to personally co-sign corporate notes.

d) If a shareholder is required to co-sign corporate notes he is personally responsible for guaranteeing the note and his personal assets will be used to pay off any unpaid corporate responsibilities for that note.

2) Another advantage of the corporate structure is maintaining the continuity of the operation in times of crisis.

a) If unusual circumstances result in the death of a shareholder, only the status of their shares must be determined.

b) The corporate structure remains intact through this crisis.

c) The probate process, in this circumstance will be much simpler.

        (1) This is due to the fact that only the shareholders share must be probated not multiple assets.

        (2) The end result is less disruption to the corporation and reduces probate costs.

    3) Numerous employee benefits may be available to corporations, many of which are tax deductible to the corporation and not taxable as income to the employee. Some of the benefits which may be used in this way include:

        a) Medical insurance

        b) Disability salary continuation plans

        c) Life insurance

        d) Pension plans

        e) Also employee stock ownership plans can be used as a financing tool for employers and deferred compensation plans to employees.

b. The disadvantages under a corporation include:

    1) As previously indicated there can be increases in federal income taxes if an operation uses sub chapter C corporation.

    2) There will be an increase in operators payment of social security taxes under the corporate structure. Instead of one flat rate paid under sole proprietorship and partnership a slightly higher rate from individuals combined with employee (corporate share).

    3) Additional planning time and legal fees will result from establishing a corporate structure as it is a slightly more complex business organization.

    4) Corporate structure will require additional record keeping time and additional forms to be filed for federal income taxes.

    5) As in the case of partnerships a great deal of autonomy may be lost in organizing with others. Likewise more conflicts will arise in the operation than would occur with sole proprietorships.

8. What steps should be followed in setting up the corporation?

   Use TM/HO-II/11/8 to discuss some steps which will help in setting up a corporation. TM/HO-II/11/8 is similar to the partnership checklist but is designed for information needed for articles of incorporation.

   a. Like forming a partnership, the formation of a corporation will require the assistance of a lawyer. This may prove even more important in formation of an orchard due to state and federal laws associated with corporate structures.

      1) As with partnerships much of the legal costs can be reduced by doing your "homework" in advance.

         b) The steps involved in gathering this preliminary information is very similar to that outlined for forming a partnership.

         c) The first step is designed to determine if the corporate structure would be feasible.

            (1) Again individual goals of prospective shareholders should be discussed and adjusted to form and conform to the goals of the corporation.

            (2) Next an inventory of contributions of shareholders should be setup to help determine allocation of corporate shares.

            (3) These amounts may be used to calculate the number of total shares in the corporation, the value of those shares, and the percentage allocation.

            (4) Once this is complete the anticipated corporate returns should be estimated. From this shareholders can determine their individual returns from the operator.

   d. The next step in the procedure is for shareholders to complete the corporate information checklist. Answers to the questions on the outline should be written down for future reference at the lawyers office.

   e. Finally all interested shareholders should retain good legal advice to help set up the articles of incorporation and bylaws and file with the appropriate state and federal agencies.

F. Group Discussion

Time should be allotted to allow individuals to ask questions about the three business structures. Ask enrollees in partnerships or corporations how they like working within those structures. Ask enrollees in sole proprietorships if they foresee any need in the future of changing to another business structure.

G. Conclusions

1. Sole proprietorship is the simplest form of business structure and allows the most autonomy in operators managerial decision making.
2. Partnerships and corporate structures need to be examined as an option as family operations look to continue the business from one generation to the next.
3. Rules governing partnerships in Washington State are based on the Uniform Partnership Act. (U. P. A.)
4. The state guidelines for structuring partnerships are very flexible and allow partners to structure the business arrangement to meet their specific needs.
5. Partnership arrangements can be verbal or written.
6. Partnership's arrangements may be implied even if partners are not so named or consider themselves partners.
7. One of the greatest disadvantages of forming a partnership is the additional liability incurred by partners.
8. Individual partners personal assets are not shielded by the partnership arrangement.
9. Limited partners liability are limited to the amount of their investment in the partnership.
10. Partnerships provide a good way for individuals to pool resources.
11. After setting partnership goals and completing a partnership checklist a lawyer should be retained to draw up the partnership agreement.
12. The order by which liabilities are paid in winding up a partnership after dissolution is, first to creditors, then to partners for other than capital and profits, partner capital, and finally partner profits.

13. A corporation is a legal entity whose existence is dependent on state law.

14. Corporate structure shields shareholders personal assets.

15. Corporations have most of the legal rights and responsibilities of individuals.

16. Articles of incorporation must be filed with the Secretary of State to obtain a certificate of incorporation.

17. Most orchard operations will find the sub chapter S corporate status the most beneficial for maximizing after tax income.

18. Corporate structures help maintain the continuity of the operation through the death of shareholders.

19. Many more employee benefits are available to individuals under a corporate structure.

20. One of the disadvantages of forming a corporation is the increase in record keeping.

21. As with the formation of a partnership after business goals are established and the checklist for forming a corporation is complete, a lawyer should be retained to draw up the articles of incorporation and bylaws

H. Orchard Visit

Time should be spent when visiting orchardists to discuss their current business structure. Many will find this structure suits their needs very well, others may wish to look into other possibilities for their future needs.

I. Materials

Instructor/Enrollees

TM/HO-II/11/1	Guidelines Governing a Partnership
TM/HO-II/11/2	Advantages and Disadvantages of Partnerships
TM/HO-II/11/3	Partnership Checklist
TM/HO-II/11/4	Dissolution of Partnerships

TM/HO-II/11/5	Guidelines Governing a Corporation
TM/HO-II/11/6	Comparison of Chapter S and Sub Chapter C Corporations
TM/HO-II/11/7	Advantages and Disadvantages of Corporations
TM/HO-II/11/8	Corporation Checklist

GUIDELINES GOVERNING A PARTNERSHIP

* BASED ON THE UNIFORM PARTNERSHIP ACT (U.P.A.)

* AGREEMENT MAY BE VERBAL OR WRITTEN TO BE LEGAL

* A PARTNER MAY BE A PERSON, ANOTHER PARTNERSHIP, A CORPORATION, OR OTHER ASSOCIATION

* A PARTNERSHIP MAY BE IMPLIED BY THE SITUATION WITHOUT ANY OF THE PARTIES INVOLVED FORMALLY SETTING UP THE PARTNERSHIP

* EACH PARTNER HAS EQUAL RIGHTS TO USE PARTNERSHIP PROPERTY UNLESS STATED IN THE AGREEMENT

* PROPERTY MAY NOT BE USED OUTSIDE THE BUSINESS WITHOUT THE CONSENT OF ALL PARTNERS UNLESS OTHERWISE STATED IN THE AGREEMENT

GUIDELINES GOVERNING A PARTNERSHIP

CONTINUED

- PROPERTY CANNOT BE SOLD WITHOUT THE CONSENT OF ALL PARTIES UNLESS OTHERWISE STATED IN THE AGREEMENT
- PROPERTY CANNOT BE USED AS SECURITY FOR NON-PARTNERSHIP DEBT UNLESS OTHERWISE STATED IN THE AGREEMENT
- ON DEATH OF A PARTNER, PROPERTY SHARES RETURN TO THE PARTNERSHIP UNLESS OTHERWISE STATED IN THE AGREEMENT
- ALL PARTNERS HAVE EQUAL VOICE IN THE PARTNERSHIP UNLESS OTHERWISE STATED IN THE AGREEMENT
- PROFIT AND LOSSES ARE DISTRIBUTED EQUALLY UNLESS OTHERWISE STATED IN THE AGREEMENT
- PARTNERSHIPS MUST MAINTAIN THEIR CONSENT OF WARDS AND FILE PARTERSHIP INCOME TAX INFORMATION
- ALL PARTNERS ARE JOINTLY LIABLE FOR THE DEBTS, OBLIGATIONS, CRIMINAL ACTS, OR WRONGFUL ACTS OF THE PARTNERSHIP, OR INDIVIDUAL PARTNER CONDUCTING OPERATION OF THE BUSINESS

ADVANTAGES AND DISADVANTAGES OF A PARTNERSHIP

ADVANTAGES

- * ALLOWS INDIVIDUALS TO POOL RESOURCES
- * PARTNERSHIPS ARE THE SIMPLEST BUSINESS ORGANIZATION TO FORM FOR TWO OR MORE INDIVIDUALS
- * PARTNERSHIPS CAN PROVIDE A MEANS FOR ESTATE PLANNING

DISADVANTAGES

- * THE MAJOR DISADVANTAGE IS THE ADDITIONAL LIABILITY INVOLVED IN THIS FORM OF BUSINESS ORGANIZATION
- * NO MATTER HOW AMIABLE THE PARTNERS, PARTNERSHIPS WILL RESULT IN MORE CONFLICT IN MANAGERIAL DECISION MAKING THAN SOLE PROPRIETORSHIP

CHECKLIST FOR FARM PARTNERSHIPS

The following checklist includes much of the information that should be discussed by potential partners before contracting an attorney to draw up the partnership agreement. This checklist was taken from Business Management For Farmers, by J.W. Looney.

1. Name

   What is the proposed name of the partnership?

2. Partners

   (a) What are the full names and addresses of all partners?

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fixtures, stocks of goods, etc.

(c) Do the partners as individuals already own part or all of such properties? How much cash will be required to purchase that which they do not own?

(d) Do any or all of the partners have special skills or experience in the conduct of the business?

(e) Is the business such that large losses may be realized? If so, would a corporation be more desirable?

(f) If successful, do the partners hope to expand the business? Will capital be required for expansion? About how much?

(g) What are the financial resources of each partner? What are the family circumstances of each?

6. Capital Contributions, Accounts, and Withdrawals

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the separate property of [illegible]

(i) What labor contributions are to be made by each partner? Is each partner to devote full time to the business?

(j) Are partnership losses considered to be a reduction of a partner's capital contribution?

(k) Are inventories of all property, real and personal, to be regularly taken? How often?

(l) Who will maintain a capital account showing the ownership interest of each partner, and how often is it to be updated?

7. Profits and Losses, Accounting

   (a) What items should be considered as farm expenses?

   (b) Is depreciation on farm improvements considered a farm expense charged to the partnership?

   (c) Is each partner to receive interest on his contribution or a

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[illegible] made for periodical audits by accounting firms?

   (l) Are all partners to have free access to the books at all times?

   (m) What is the annual profit or loss of the partnership to be determined?

   (n) Are current (or drawing) and capital accounts to be established for each partner? Are reserves for the payment of claims to be created?

8. Management

(a) Are the partners to have an equal voice in management?

(b) If the partners do not have an equal voice in management, how are management decisions made? Does the senior partner(s) have management control?

(c) What provisions are to be made for settling disputes arising under the partnership agreement?

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mortgage, or dispose of partnership property or property [illegible] or leased to the partnership, or to dispose of the "good will" of the business?

(f) Should they be prohibited from mortgaging or disposing of any or all of their interest in the partnership or from admitting a new member to the partnership?

10. Death, Disability, Retirement, Expulsion, or Withdrawal of a Partner

- (a) What acts, other than expiration of the term of the partnership, shall result in dissolution? Death of a partner? Bankruptcy? Incompetency? Assignment for benefit of creditors? Withdrawal or expulsion?

- (b) Is provision to be made for the expulsion of a partner? By what means? For what acts?

- (c) Is disability (physical or mental) grounds for expulsion or

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- (i) How is the value of his interest to be determined? Book value? By appraisers? By C.P.A.s?

- (j) Is good will be to be considered? If so, on what basis?

- (k) How is payment to be made? Cash within a short period? Installment payments?

- (l) In such case, what security for payment is to be given? Promissory notes? Liens or charge on assets of partnership?

- (m) Is the partnership to incorporate upon the death of the partner so that stock may be given to his estate in settlement?

(n) Is the estate of the deceased to continue to participate in profits? For how long?

(o) What provision is to be made to make certain that the deceased or withdrawing partner bears his equitable share of losses?

(p) Is a fund to be withheld or created for payment of contingent claims?

(q) In what proportions are the remaining partners to divide the interest of the deceased or retiring partner upon purchase?

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(z) Must remaining partners make an accounting to other partners or to a legal representative of a deceased partner? If so, when, and how often?

DISSOLUTION OF A PARTNERSHIP

RULES FOR DISTRIBUTION

LIABILITIES OF A PARTNERSHIP ARE PAID IN THE FOLLOWING ORDER:

1. CREDITORS OTHER THAN PARTNERS
2. PARTNERS OTHER THAN CAPITAL PARTNERS
3. PARTNERS CAPITAL
4. PARTNERS PROFITS

GUIDELINES GOVERNING A CORPORATION

- * CORPORATIONS MAY CONDUCT NORMAL BUSINESS ACTIVITIES SUCH AS OWN CAPITAL, PAY TAXES, MAKE CONTRACTS, SUE, OR BE SUED
- * CORPORATIONS HAVE MOST OF THE LEGAL RIGHTS AND RESPONSIBILITES OF INDIVIDUALS
- * ARTICLES OF INCORPORATION MUST BE DRAWN UP AND FILED WITH THE SECRTARY OF STATE FOR A CORPORATION TO BE LEGAL
- * AN INITIAL ANNUAL REPORT MUST BE FILED WITH THE ARTICLES OF INCORPORATION
- * CORPORATION EXISTANCE BEGINS WITH THE SECRETARY OF STATE ISSUANCE OF THE CERTIFICATE OF INCORPORATION
- * CORPORATIONS CONTINUE TO EXIST AS LONG AS SHAREHOLDERS DESIRE AND ANNUAL FEES AND REPORTS ARE FILED
- * FOR MOST ORCHARD BUSINESS CORPORATIONS THE BOARD OF DIRECTORS, SHAREHOLDERS, AND OFFICERS ARE THE SAME PEOPLE

QUALIFICATIONS OF S CHAPTER STATUS

- * MUST BE A DOMESTIC CORPORATION
- * MUST HAVE ONLY ONE CLASS OF STOCK
- * MUST HAVE NO MORE THAN 35 SHAREHOLDERS
- * MUST HAVE ONLY INDIVIDUALS, ESTATES, AND CERTAIN TRUSTS. CONSEQUENTLY, PARTNERSHIPS AND OTHER CORPORATIONS CANNOT BE SHAREHOLDERS IN S CORPORATIONS
- * SHAREHOLDERS MUST BE RESIDENTS OF THE UNITED STATES

ADVANTAGES AND DISADVANTAGES

OF A CORPORATION

ADVANTAGES

- * LIMITED LIABILITY OF SHAREHOLDERS
- * MAINTAINING THE CONTINUITY OF THE BUSINESS IN TIMES OF CRISIS
- * EMPLOYEE BENEFITS MAY BE AVAILABLE UNDER A CORPORATE STRUCTURE
- * EXCELLENT TOOL FOR ESTATE PLANNING

DISADVANTAGES

- * INCREASE PAYMENT OF INCOME TAXES FOR SUBCHAPTER C CORPORATIONS
- * INCREASE IN OPERATORS' PAYMENT OF SOCIAL SECURITY TAXES
- * ADDITIONAL MANAGERIAL TIME AND LEGAL FEES IN ESTABLISHMENT PERIOD
- * ADDITIONAL FORMS FILED FOR INCOME TAX PURPOSES
- * AUTONOMY IN MANAGERIAL DECISION-MAKING MAY BE LOST COMPARED TO SOLE PROPRIETORSHIP

TM/HO-II/11/8

CHECKLIST FOR CORPORATIONS

The checklist for corporations is designed to highlight some information individuals should consider before contacting their lawyer. This list was taken from Business Management For Farms, by J.W. Looney.

1. Name

   What is to be the corporate name? Consider application to reserve corporate name.

2. Duration

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6. Shareholders

   Names and addresses? Date of annual meeting? Place of annual meeting? Voting requirements? Quorum requirements?

7. Board of Directors

   Number of directors on board? Names of first directors? Voting requirements? Quorum requirements? Arrangements for meetings? Director fees?

CHECKLIST FOR CORPORATION FORMATION

8. Officers

What officers are to be authorized? Who is expected to be elected to each office? What salary is to be authorized for each officer? Is corporation to pay entire social security or only one-half? Is a bonus policy to be authorized?

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What method of income taxation is to be followed? Regular? Sub-chapter S?

14. Registered office

What is the address of the registered office of the corporation?

15. Registered agent

Who is to be the registered agent of the corporation?

16. Loans, mortgages

What loans or mortgages are to be assumed or taken subject to by corporation? Give special attention to Federal Land Bank, Production Credit, Farmers Home Administration loans.

17. Fiscal year

What is to be the corporation's fiscal year?

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22. Minorities

Is stock to be permitted to pass to off-farm shareholders?

23. Wills

Do wills and estate plans of shareholders need to be updated by codicil or completely rewritten?

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

III. Lesson 12: Estate Planning

A. Review

Conclusions from the previous lesson, Organizing the Orchard Business should be reviewed. These conclusions include:

1. Sole proprietorship is the simplest form of business structure and allows the most autonomy in operators managerial decision making.
2. Partnerships and corporate strictures need to be examined as an option as family operations look to continue the business from one generation to the next.
3. Rules governing partnerships in Washington State are based on the Uniform Partnership Act (U.P.A.).
4. The state guidelines for structuring partnerships are very flexible and allow partners to structure the business arrangement to meet their specific needs.
5. Partnership arrangements may be verbal or written.
6. Partnership arrangements may be implied even if partners are not so named or consider themselves partners.
7. One of the greatest disadvantages of forming a partnership is the additional liability incurred by the partners.
8. Individual partners personal assets are not shielded by the partnership arrangement.
9. Limited partners liability are limited to the amount of their investment in the partnership.
10. Partnerships provide a good way for individuals to pool resources.
11. After setting partnership goals and completing a partnership checklist a lawyer should be retained to draw up the partnership agreement.
12. The order by which liabilities are paid in winding up a partnership after dissolution is, first to creditors, then to partners for other than capital and profits, partner capital, and finally partner profits.

13. A corporation is a legal entity whose existence is dependent on state law

14. Corporate structure shields shareholders personal assets from business liabilities.

15. Corporations have most of the legal rights and responsibilities of individuals.

16. Articles of incorporation must be filed with the Secretary of State to obtain a certificate of incorporation.

17. Most orchard operations will find the sub chapter S corporate status the most beneficial for maximizing after tax income.

18. Corporate structures help maintain the continuity of the operation through the death of shareholders.

19. Many more employee benefits may be available to individuals under a corporate structure.

20. One of the disadvantages of forming a corporation is the increased record keeping, annual state report, and increase paper work in filing income tax returns.

21. As with the formation of a partnership, after business goals are established and the checklist for forming a corporation is complete a lawyer should be retained to draw up the articles of incorporation and bylaws

B. Objective

To establish an estate plan which meets the goals and objectives of the business and family.

C. Motivation

1. "What will happen to your orchard should you die tomorrow?" Ask how many enrollees have an estate plan. Point out that while it is possible not to have a will, everyone has an estate plan. If a person does not have a personal plan, the state where they live has a plan that will be followed.

2. Give enrollees HO-II/13/1 Washington Law for Intestate Decent and discuss the distribution of property under this law. The question is, "Can I improve on the state's plan?"

D. Key Questions

1. What are the objectives of an estate plan?

2. What are some guidelines for estate planning?

3. How should title to property be held?

4. What should be included in a will?

5. How can child care be included in an estate plan?

6. How can sole proprietorship, partnership, and corporations affect estate planning?

E. Introduction of Information

This lesson represents an attempt to inform enrollees of the basic estate planning tools available. As discussed in lesson 11 preventative legal advice will be less expensive than retaining a lawyer in settling disputes. It is imperative to obtain the advise of an attorney and other advisors when making decisions about specific estate planning situations.

This lesson is not designed to be the sole source of estate planning information. It is designed to give enrollees the groundwork from which the can more successfully work with their estate planning team. This team of advisors should be composed of a lawyer, tax accountant and insurance agent. The students should remember that not all lawyers and accountants specialize in tax matters. Their local lawyer or bar association may be able to suggest tax lawyer and accountants who can help with this plan.

1. What are some guidelines for estate planning?

   Handout copies of WSU Cooperative Extension guidesheet EB1231, Estate Planning Basics for Washington Families by Richard W. Carkner. Information for this lesson was taken from this informative guidesheet.

   a. There are 4 major steps in estate planning, they are:

      1) Define the objectives you wish your estate plan to meet.

      2) Complete a property inventory. For most enrollees this is already up to date in their record books.

      3) Become familiar with estate planning tools, concepts, tax laws, and forms of ownership.

4) Seek and put to use competent legal, accounting and insurance advisors.

b. Along with these 4 steps it is important to bear in mind that tax savings alone should not be the soul basis for planning. It may be that a plan which saves the most taxes does not comply with important estate planning objectives.

c. With proper planning there are ways in which estate planning objectives may meet goals and save taxes.

d. An estate plan is never complete. Once a plan is worked out it should be periodically reevaluated as tax laws and family situations change.

e. The best estate plan may utilize a combination of wills trusts insurance, gifts, community property agreements, and joint ownership.

2. What are the objectives of an estate plan?

Use TM/-II/12/2 to guide a discussion about the objectives of estate planning.

a. It is important to determine the objectives of an estate plan for your particular needs. This involves identifying how property is to be used, for whose benefit, and at what time.

b. Objectives will vary from situation to situation. Some possible objectives for an estate plan are:

1) To provide for adequate retirement income.

2) To provide for the care of minor children if both parents should meet with a common death. The provision should be for guardians for the children as well as financial needs as they grow up.

3) To maintain the continuity of the business

a) Planning can reduce estate erosion caused by business asset sales to meet settlement costs.

b) Having no plan could result in heirs not in the family business insisting on its liquidation so they can receive their inheritance.

4) To minimize federal and estate gift taxes. While it may not be possible to eliminate all taxes it is generally possible to reduce them significantly by careful planning.

5) To reduce legal fees, probate, and/or other costs. As described in lesson 12 preventive legal fees will be much less than those fees spent for the settlement of disputes.

6) To reduce property management responsibilities.

   a) A surviving spouse with young children may not desire to manage the family business.

   b) Business management responsibilities could be transferred to a trust, the surviving spouse could receive the income from the business and concentrate fully on family and professional responsibilities.

7) To limit the power of a successor spouse on assets should they remarry. Remarriage and subsequent property transfer could actually disinherit children from property acquired during the original marriage.

8) To plan for enough liquidity to meet estate settlement costs most efficiently.

   a) This may be achieved from a number of sources: sales of accumulated property, cash savings, life insurance, borrowing potential, Keogh and IRA plans, as well as federal estate tax deferral options.

   b) If liquidity is needed careful evaluation of each possibility and select the best alternative to meet estimated future needs.

   c) Some of these objectives may conflict so after they are identified they should be put in order of priority so appropriate compromises can be met.

   d) These objectives will vary with the size of estates. Small estates need not worry with managing death taxes for instance. And large estates will need to rely on more than community property agreements in their estate plans.

3. How can title to property be held?

   Use TM-II/13/ to outline the different ways title to property may be held. Explain the legal ramification of each of these.

   a. How property is owned has important implications on the flexibility of transfer and on federal estate planning taxes. The five forms of ownership that will be discussed include community property, sole ownership, life estate, tenancy in common, and joint tenancy with the right of survivorship.

   b. Community Property

      1) This includes all property acquired after marriage other than that acquired by gift or inheritance Such property belongs equally to both spouses.

      2) This is essentially true of all property regardless of whether the document of title states that they are held jointly or in sole ownership.

      3) Property not classified as community property is classified as either husband's or wive's separate property. This should include:

         a) All property acquired before marriage. This can remain the individual spouse's property if it is specified in some way.

         b) Any property purchased with funds from the sale of separate property is considered separate property as well.

         c) Income generated from separate property generally remains separate.

         d) Co-mingling separate and community property after marriage can result in separate property becoming community property.

      4) Spouses may enter into a community property survivorship agreement which can specify what property is separate or community property.

         a) Though this does allow property to pass directly to surviving spouses without probate it can create some problems.

   - b) This agreement is irrevocable without the consent of both spouses and takes precedent over a will.
   - c) This is not a good tax management tool.
   - d) This agreement cannot be used to pass to anyone other than surviving spouse.

c. Sole Ownership

- 1) Sole owners hold complete title to property. They may sell, mortgage or otherwise dispose of that property in their lifetime or by a will upon their death.
- 2) Sole owners may convey part of their rights to property or convey property with conditions attached.

d. Life Estates

- 1) A life estate is a limited ownership interest in which a named life tenant has the right to property to use only in their lifetime. It then passes on to the remainder man.
- 2) Life estates may be created in the deed of the property or by will
- 3) Life estates can be transferred under a marital deduction. If this is done property is subject to estate taxes only upon the death of the life tenant or upon sale of the property.
   - a) A life estate may be used as a means of providing support for the surviving spouse without such property being in the estate of the property owner.
   - b) Non-marital deduction life estates can save taxes on larger estates by generation skipping.

e. Tenancy-in-Common

- 1) If two or more individuals own property as tenants-in-common they have an undivided interest in the property.
- 2) This type of ownership may be created in the deed, by will, or if not specified in either of these by inheritance laws.
- 3) Upon the death of one co-owner their share of the property goes to their specified heirs, not to the other co-owner.

a) This arrangement allows many options in transfer of property which is one of the major advantages.

b) There are two major disadvantages.

(1) First any co-owner may sell their share without the consent of the other co-owners.

(2) Second a co-owner may borrow against his share (without the consent of the other co-owners) and should he default the remaining co-owners would need to repay the obligation to maintain control of the property.

f. Joint Tenancy with the Right of Survivorship

1) Legal steps must be taken in the deed of property to have joint tenancy with right of survivorship It requires special wording within the deed.

2) Upon the death of one joint tenant his or her share becomes the property of the remaining joint tenants named in the original document.

3) Once established this form of ownership cannot be over written by a will.

4) Joint tenancy is best suited for transfer of small amounts of property such as a savings account in joint tenancy between mother and daughter.

5. How can a will be used in estate planning?

a. Even though Washington succession laws provide for property distribution, the results may not be according to your wishes.

b. Wills provide for the distribution of a persons estate after death.

1) A will enables the owner to distribute property to best fit his or her individual situation or desires.

2) Guardians for minor children can be named in a will in case of common disaster to parents.

3) A will can be used to select who will administer the estate and also wave the security bond required for him or her to serve.

4) A will may be used to create a life estate, or a testamentary trust and reduce estate taxes.

c. A will should not be used as the sole estate planning tool. Some limitations to using a will include:

1) A will does not take precedence over property transfers prescribed in joint tenancy ownership with rights of survivorship or community property agreements.

2) A will cannot change beneficiaries of a life insurance policy.

3) A will cannot transfer government bonds held in co-ownership or payable on death.

4) A will should not be used for instructions for burial. Your wishes must be expressed to someone before your death.

5. How can child care be included in an estate plan?

Use TM-II/12/ to show the differences between a trust and a guardianship.

a. Property under guardianship must be released at age 21 and possible sooner. This is not true of a trust.

b. If there are two or more minor beneficiaries, shares are equalized immediately upon vesting of an estate in the case of guardianship. This is not true of a trust.

c. Authority can be given for greater flexibility in a trust administration than guardianship administration. In a guardianship it would take a court order to liquidate assets.

d. Death of a ward during minority requires administration of his estate, with few exceptions. In a guardianship, the estate will pass through litigation to be settled but in a trust this would not be the case.

e. Income from a ward's estate is taxed to him. A trust may not require all the income paid to him unless needed; any income not so paid will be taxed to the trust and not to the ward.

6. How can sole proprietorship, partnership, and corporations be used in estate planning?

   Use TM-HO-II/12/7, 8 and 9 to discuss some possibilities for estate planning provided by business organization.

   a. Estate planning possibilities with a sole proprietorship include:

      1) The sole proprietor and an employee can contract in advance for the sale and purchase of the business at the retirement or death of the owner.

      2) The sole proprietor may secure, on a limited basis, the advantages of a profit sharing loan.

      3) Other sources of cash can be planned to meet expenses which are incidental to death.

      4) The business can be transferred during the owners lifetime in consideration of the purchases's promise to support the seller and his wife until their death.

      5) The owners will can permit one child to buy the business, the proceeds being divided among children.

      6) An employee can be given some authority and rights to encourage him to continue with the business.

      7) The sole proprietorship can be converted into a partnership or a corporation.

   b. Estate planning possibilities with a partnership include:

      1) Total income tax can be minimized by sharing business income with family members who are partners.

      2) Business continuity beyond death of a partner is possible with proper planning.

      3) Retirement income of a partner can be improved by a planned sale of the retiring partner's interest to his partners.

      4) A deceased partner's widow can be supported by payments from the partnership, either as a share of the profits or as payments to an purchase of a decedent's interest.

      5) A guaranteed market for deceased partner's interest can be created in the surviving partners.

6) A child of a partner can be attracted to the business as a co-owner.

7) Ownership and management can be transferred to the next generation gradually.

8) A partner's will can dispose of his interest in the business.

c. Estate planning possibilities with a corporation include:

1) A child of a stockholder can be brought into the business as co-owner conveniently and with little risk of disrupting the business.

2) Family investments can be encouraged with the assurance of limiting liabilities to the original investment.

3) Death taxes can be reduced by lifetime gifts of shares of stock without serious risk to the continuity of the business.

4) Business continuity beyond death of the principal stockholder is possible.

5) Social Security benefits can be increased by increased salary payments.

6) Income tax savings and increased retirement income may result to stockholder or employee through the use of a pension or profit sharing plans.

7) A deceased stockholder's widow can be assisted by a salary continuation plan, payment of death benefits, or payments in purchase of decedents' shares of stock.

8) A guaranteed market for deceased stockholders' shares can be created in the surviving stockholders or in the corporation.

9) Sale of shares by a minority stockholder need not disturb the business.

10) The value of minority interest can be protected.

11) Transfer of shares can be used for specific purposes as:

   a) Increase employee's ownership in lieu of higher wages.

b) Increase children's ownership to keep them interested in the business.

c) Minimize death taxes.

d) Equalize advantages given to children.

e) Repay special favors to children.

f) Piecemeal sale to provide retirement income.

F. Group Discussion

Let the group discuss the application of ideas developed throughout the lesson. A local lawyer or tax accountant should be included in the lesson to share their ideas and experiences with the group.

G. Conclusions

1. Estate planning should be started as real property is owned or when you or your spouses death can create real hardships on others.
2. Knowing how to hold property can aid in estate planning.
3. Proper care of children should be a major goal of estate planning.
4. The type of business organization will have a great effect on estate planning.
5. Estate plans should be reviewed periodically and updated.
6. Care should be taken to form a good estate plan team made up of a tax lawyer, accountant, and insurance man.

H. Orchard Visit

It would be advantageous for you to visit with the local lawyers and tax accountants to get a feel for the way they answer questions about estate planning as well as what questions are most often asked.

Discuss with the family their goals in estate planning and help them to establish these goals by guiding them with goal selection and a good estate planning team.

I. Materials Needed

Instructor/Enrollees:

Estate Planning Basics for Washington Families, EB1231

TM/HO-II/12/1	Washington Law for Intestate Decent
TM-II/12/2	Estate Planning Objectives
TM-II/12/3	How Title Can Be Held On Property
TM-II/12/4	What A Will Can Accomplish
TM-II/12/5	What A Will Cannot Accomplish
TM-II/12/6	Advantages Of A Trust vs A Guardianship
TM-II/12/7	Estate Planning Possibilities With A Sole Proprietorship
TM-II/12/8	Estate Planning Possibilities With A Partnership
TM-II/12/8	Estate Planning Possibilities With A Corporation

ESTATE PLANNING OBJECTIVES

- PROVIDE FAMILY SUPPORT
- PROVIDE RETIREMENT INCOME
- PROVIDE BUSINESS OPPORTUNITIES FOR CHILDREN
- PROVIDE FOR AN EQUITABLE DISTRIBUTION AMONG CHILDREN
- PROVIDE CHARITABLE SUPPORT IF DESIRED
- MINIMIZE TAXES AND REDUCE PROBATE ENTANGLEMENT

TM-II/12/3

HOW TITLE CAN BE HELD ON PROPERTY

- COMMUNITY PROPERTY
- SOLE OWNERSHIP
- TENANCY IN COMMON
- LIFE ESTATES

WHAT A WILL CAN DO FOR YOU

- DISTRIBUTE PROPERTY OF OWNER AS THE OWNER SEE FIT
- SUGGEST AN EXECUTOR OR ADMINISTRATOR TO HANDLE THE ESTATE SETTLEMENT
- SUGGEST GUARDIANS FOR MINOR CHILDREN IN CASE BOTH PARENTS ARE DECEASED

WHAT A WILL CANNOT ACCOMPLISH

- TRANSFER ASSETS OF A JOINT TENANT OR TENANT BY THE ENTIRETY
- CHANGE BENEFICIARIES OF A LIFE INSURANCE POLICY
- TRANSFER GOVERNMENT BONDS HELD IN CO-OWNERSHIP OR POD
- LEAVE INSTRUCITONS AS TO BURIAL
- CUT OFF WIDOW'S RIGHTS

TM-II/12/6

ADVANTAGES OF A TRUST VS GUARDIANSHIP

TRUST	GUARDIANSHIP
* PROPERTY WILL REMAIN IN TRUST AS LONG AS STIPULATED	* PROPERY RELEASED AT AGE 21
* MONIES REMAIN IN TRUST AND USED AS IF PARENTS WERE STILL ALIVE	* MONIES DIVIDED AT DEATH AND EACH MINOR CHILD HAS A SET AMOUNT OF MONIES
* FLEXIBLE AUTHORITY	* A COURT ORDER NEEDED TO SELL ASSETS
* IN CASE OF A MINOR'S DEATH THE ESTATE NEED NOT BE LITAGATED	* WITH THE DEATH OF A MINOR THE ESTATE WILL HAVE A HIGH PROBABILITY OF LITIGATION
* NOT ALL OF THE INCOME FROM A TRUST NEED TO HAVE INCOME TAX PAID BY THE WARD. THE TRUST MAY PAY SOME OF THE TAX	* INCOME FROM A WARD'S ESTATE IS TAXED AND PAID BY THE WARD

ESTATE PLANNING POSSIBILITIES WITH A SOLE PROPRIETORSHIP

- THE SOLE PROPRIETOR AND AN EMPLOYEE CAN CONTRACT IN ADVANCE FOR THE SALE AND PURCHASE OF THE BUSINESS AT THE RETIREMENT OR DEATH OF THE OWNER.
- THE SOLE PROPRIETOR MAY SECURE, ON A LIMITED BASES, THE ADVANTAGES OF A PROFIT SHARING PLAN.
- OTHER SOURCES OF CASH CAN BE PLANNED TO MEET EXPENSES WHICH ARE INCIDENTAL TO DEATH.
- THE BUSINESS CAN BE TRANSFERRED DURING THE OWNER'S LIFETIME IN CONSIDERATION OF THE PURCHASER'S PROMISE TO SUPPORT THE SELLER AND HIS WIFE UNTIL THEIR DEATH.
- THE OWNER'S WILL CAN PERMIT ONE CHILD TO BUY THE BUSINESS, THE PROCEEDS BEING DIVIDED AMONG OTHER CHILDREN.
- AN EMPLOYEE CAN BE GIVEN SOME AUTHORITY AND RIGHTS TO ENCOURAGE HIM TO CONTINUE THE BUSINESS.
- THE SOLE PROPRIETORSHIP CAN BE CONVERTED INTO A PARTNERSHIP OR A CORPORATION.

ESTATE PLANNING POSSIBILITIES WITH A PARTNERSHIP

- A CHILD OF A STOCKHOLDER CAN BE BROUGHT INTO THE BUSINESS AS CO-OWNER CONVENIENTLY AND WITH LITTLE RISK OF DISRUPTING THE BUSINESS.
- FAMILY INVESTMENTS CAN BE ENCOURAGED WITH THE ASSURANCE OF LIMITING LIABILITY TO THE ORIGINAL INVESTMENT.
- DEATH TAXES CAN BE REDUCED BY LIFETIME GIFTS OF SHARES OF STOCK WITHOUT SERIOUS RISK TO THE CONTINUITY OF THE BUSINESS.
- BUSINESS CONTINUITY BEYOND THE DEATH OF THE PRINCIPAL STOCKHOLDER IS POSSIBLE WITH PROPER PLANNING.
- THE CORPORATION CAN ELECT TO BE TAXED LIKE A PARTNERSHIP, THEREBY AVOIDING FEDERAL INCOME TAX AND STILL ATTAINING CERTAIN ADVANTAGES OF A CORPORATION.
- SOCIAL SECURITY BENEFITS MAY BE INCREASED BY INCREASED SALARY PAYMENTS.
- INCOME TAX SAVINGS AND INCREASED RETIREMENT INCOME MAY RESULT TO STOCKHOLDER-EMPLOYEES THROUGH THE USE OF A PENSION OR A PROFIT SHARING PLAN.
- A DECEASED STOCKHOLDER'S WIDOW CAN BE ASSISTED BY A SALARY CONTINUATION PLAN, PAYMENT OF DEATH BENEFITS, OR PAYMENTS IN PURCHASE OF DECEDENT'S SHARES OF STOCKS.

ESTATE PLANNING POSSIBILITIES WITH A CORPORATION

- A CHILD OF A STOCKHOLDER CAN BE BROUGHT INTO THE BUSINESS AS CO-OWNER CONVENIENTLY AND WITH LITTLE RISK OF DISRUPTING THE BUSINESS.
- FAMILY INVESTMENTS CAN BE ENCOURAGED WITH THE ASSURANCE OF LIMITING THE LIABILITY TO THE ORIGINAL INVESTMENT.
- DEATH TAXES CAN BE REDUCED BY LIFETIME GIFTS OF SHARES OF STOCK WITHOUT SERIOUS RISK TO THE CONTINUITY OF THE BUSINESS.
- BUSINESS CONTINUITY BEYOND THE DEATH OF THE PRINCIPAL STOCKHOLDER IS POSSIBLE WITH PROPER PLANNING.
- THE CORPORATION CAN ELECT TO BE TAXED LIKE A PARTNERSHIP, THEREBY AVOIDING FEDERAL INCOME TAX AND STILL ATTAINING CERTAIN ADVANTAGES OF A CORPORATION.
- SOCIAL SECURITY BENEFITS MAY BE INCREASED BY INCREASED SALARY PAYMENTS.

ESTATE PLANNING POSSIBILITIES WITH A CORPORATION, CONTINUED

* A DECEASED STOCKHOLDER'S WIDOW CAN BE ASSISTED BY A SALARY CONTINUATION PLAN, PAYMENT OF DEATH BENEFITS, OR PAYMENTS IN PURCHASE OF DECENT'S SHARES OF STOCKS.

* A GUARANTEED MARKET FOR A DECEASED STOCKHOLDER'S SHARES CAN BE CREATED IN THE SURVIVING STOCKHOLDERS OR IN THE CORPORATION.

* SALE OF SHARES BY A MINORITY STOCKHOLDER NEED NOT DISTURB THE BUSINESS.

* THE VALUE OF MINORITY INTEREST CAN BE PROTECTED.

* TRANSFER OF SHARES CAN BE USED FOR SPECIFIC PURPOSES AS:

  ** INCREASE EMPLOYEE'S OWNERSHIP IN LIEU OF HIGHER WAGES

  ** INCREASE CHILDREN'S OWNERSHIP TO KEEP THEM INTERESTED IN THE BUSINESS

  ** MINIMIZE DEATH TAXES

  ** EQUALIZE ADVANTAGES GIVEN TO CHILDREN

  ** REPAY SPECIAL FAVORS OF ONE CHILD

  ** PIECEMEAL SALE TO PROVIDE RETIREMENT INCOME.

ORCHARD BUSINESS MANAGEMENT

UNIT II: MANAGEMENT AND ANALYSIS OF THE ORCHARD OPERATION

IV. Lesson 13: Options for Computerized Record Keeping

A. Review

The previous lesson, Estate Planning, should be reviewed. Conclusions from the previous lesson should be listed. Possible conclusions include:

1. Estate planning should be started as real property is owned or when you or your spouses death can create real hardships on others.
2. Knowing how to hold property can aid in estate planning.
3. Proper care of children should be a major goal of estate planning.
4. The type of business organization will have a great effect on estate planning.
5. Estate plans should be reviewed periodically and updated.
6. Care should be taken to form a good estate plan team made up of a tax lawyer, accountant, and insurance man.

B. Objective

To contrast and compare current orchard record keeping hardware and software.

C. Motivation

1. Ask enrollees how many are using computers in their record keeping in some fashion or another. Ask how many are considering their use in the near future.
2. Point out that most enrollees after seeing the level of records needed would agree computerized record keeping could aid them in their operations financial management.
3. The question for most is do the benefits out weigh the cost for their particular operation? Investigating what is available and the cost of various systems is the only way to determine whether computerized record keeping will work in a given operation.

D. Key Questions

1. What are some terms which will aid in the examination of microcomputers for orchardists?
2. On what basis should computer hardware and software be compared for use in the orchard operation?
3. What computer software is currently available for orchard record keeping?

E. Introduction of Information

1. What are some terms which will aid in the examination of microcomputers for orchardists?

   Pass out TM/HO-II/13/1 and go over computer anatomy and terms presented in that handout. A computer should be available to aid in the discussion.

2. On what basis should computer hardware and software be compared for use in the orchard operation.

   Use TM/HO-II/13/2 to discuss some points that can be used to compare various hardware and software. Point out that all factors are important and no single factor should be the basis of purchasing equipment. Explain that these checklist can be used in class to evaluate programs which will be presented in the remaining class.

3. What computer software is currently available for orchard record keeping?

   Representatives of orchard record keeping software should be asked to make short presentations on their software. Time limits should be set according to the number of representatives speaking. Representatives of software should be given copies of TM/HO-II/13/2 to aid in guiding their presentations.

F. Group Discussion

Allow time for enrollees to ask questions of the various computer representatives.

G. Conclusions

Formulate conclusions from the information present by the various computer representatives

H. Orchard Visit

On orchard visits following this lesson answer questions of enrollees interested in computerized recordkeeping.

I. Materials Needed

Instructor/Enrollees:

IBM Compatible Computer with a minimum of 640K RAM and 20 megabyte hard disk.

Computer adapted overhead

TM/HO-II/13/1	Computer Terminology
TM/HO-II/13/2	Computer Hardware and Software Checklist

BIBLIOGRAPHY

A Guide to Budgeting for the Family, Pacific Northwest Cooperative Extension, PNW Bulletin 237, Pullman, Washington.

Account Book for Farm and Ranch Management, The Department of Agriculture and Applied Economics, Institute of Agriculture, Forestry and Home Economics, University of Minnesota, St. Paul Minnesota, 1984, 6th edition.

Agricultural Employer's Tax Guide, Circular A, Internal Revenue Service, Publication 51, Cincinnati, Ohio, 1986.

Art of Managing Money, Washington State University Cooperative Extension Publication EB0888, Pullman, Washington.

Bar Review Associates of Washington, Seattle, Washington, 1981.

Business Management for Farmers, J. W. Looney, Doane Publishing, St. Louis, Missouri, 1983.

C & O Fruit Tree Catalog and Orchard Planner, C & O Nursery, Wenatchee, Washington, 1988.

Consumer Rights, Washington State University Cooperative Extension Publication EM1178, Pullman, Washington.

Cost of Establishing an Apple Orchard, Columbia Basin, Central Washington, H. R. Hinman, Washington State University Cooperative Extension Publication EB0960, Pullman, Washington, 1981.

Doanes Tax Guide for Farmers, John C. O'Byrne, The Allen Smith Company, Indianapolis, Indiana, 1981.

Employment Taxes, Department of the Treasury, Internal Revenue Service Publication 539, Washington D. C., 1986.

Establishment and Production Costs of a 40 Acre Peach Orchard in Washington, Daniel L. Fagerlie, Washington State University Cooperative Extension Publication EM 4563, Pullman, Washington, 1980.

Estate Planning Basics for Washington Families, Richard W. Corkner, Washington State University Extension Publication EB 1231, Pullman, Washington.

Estate Planning, The Book for Farmers, Robert C. Sutter, The Interstate, Danville, Illinois, 1983, 2nd edition.

Estimated Cost of Producing Apples in the Wenatchee Area, Peter A. Dickrell, Washington State University Cooperative Extension Publication EB 1472, Pullman, Washington, 1987.

Estimated Cost of Producing Sweet Cherries in Central Washington, H. R. Himman, Washington State University Cooperative Extension Publication EB 1222, Pullman, Washington, 1983.

Estimating the Costs of Establishing a Sweet Cherry Orchard in Central Washington, H. R. Himman, Washington State University Cooperative Extension Publication EB1196, Pullman, Washington.

Explanation of the Tax Reform Act of 1986, Commerce Clearing House, Inc., Chicago, Illinois, 1986.

Explanation of the Tax Reform Act of 1986 for Business, Department of Treasury, Internal Revenue Service Publication 921, Washington D. C., 1987.

Explanation of the Tax Reform Act of 1986 for Individuals, Department of Treasury, Internal Revenue Service Publication 920, Washington D. C., 1987.

Family Dollar, Washington State University Cooperative Extension Publication EB0898, Pullman, Washington.

Family Living Account Book, Esther P. Liggett, Washington State University Cooperative Extension Publication EB0544, Pullman, Washington.

Farm and Ranch Management Education, 4th edition, Vols. I, II and III, Edgar A. Persons, Division of Agricultural Education, Department of Vocational, Technical Education, University of Minnesota, St. Paul, Minnesota.

Farm Business Analysis Curriculum Guide, Vols. I, II and III, Instructional Materials Laboratory, University of Missouri, Columbia, Columbia, Missouri.

Farm Business Analysis, Instructor's Guide, Instructional Materials Laboratory, University of Missouri, Columbia, Columbia Missouri.

Farm Business Analysis, Young Farmers Record Book, Instructional Materials Laboratory, University of Missouri, Columbia, Columbia, Missouri.

Farmers Tax Guide, Department of the Treasury, Internal Revenue Service Publication 225, Washington, D.C., 1986.

Hilltop Catalog and Handbook, Hilltop Nursery Corporation, Hartford, Michigan, 1987.

Ideal Bookkeeping and Tax Record--Farm and Ranch, Book No. 3031, Esselte Pendaflex Corporation, Garden City, New York, 1982.

Lotus 1-2-3 with version 2.0 for the IBM PC, Lon Ingalsbe, Merrill Publishing Company, Columbus, Ohio, 1985.

Modern Agricultural Management - A Systems Approach to Farming, Donald D. Osburn, Reston Publishing Co., Reston, Virginia, 1983, 2nd edition.

Money and You, Washington State University Cooperative Extension Publication EM4374, Pullman, Washington.

Money Tree, Washington State University Cooperative Extension Publication EM4375, Pullman, Washington.

Orchard Update--Chelan, Douglas, Okanogan Counties, Washington State University Cooperative Extension, Wenatchee, Washington.

Pacific Northwest, Tree Fruit Industry: A Summary of Production, Value and Cost Trends for Selected Tree Fruit Crops, Lawrence A. Burt, Washington State University Publication XB0916, Pullman, Washington, 1982.

Principles of Agribusiness Management, J. G. Beirlein, Prentice Hall, Englewood Cliffs, New Jersey, 1986.

Principles of Agribusiness Management, Instructor's Manual, J. G. Beirlein, Prentice Hall, Englewood Cliffs, New Jersey, 1986.

Rent or Buy?, Washington State University Cooperative Extension Publication EM4372, Pullman, Washington.

Resources, Washington State University Cooperative Extension Publication EM4371, Pullman, Washington.

Savings: A Way of Life, Washington State University Cooperative Extension Publication EM4382.

Setting Out Toward Financial Security, Sally Horton, Washington State University Cooperative Extension Publication EB 1330, Pullman, Washington.

Unemployment Insurance Tax Information--A Handbook for Washington State Employers, Washington State Employment Security Department, Olympia, Washington.